

4314

Service Manual

PIONEER
The Art of Entertainment

●DEH-44/US



ORDER NO.
CRT1512

HIGH-POWER COMPACT DISC PLAYER WITH FM/AM TUNER

DEH-44 US

DEH-730 UC

DEH-720 US

DEH-640 ES

DEH-520 UC

DEH-440 ES

COMPACT
disc
DIGITAL AUDIO

Note:

●See the service manual DEH-M980/UC(CRT1450) for the CD mechanism description and circuit description.

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SAFETY INFORMATION (UC, US MODEL)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

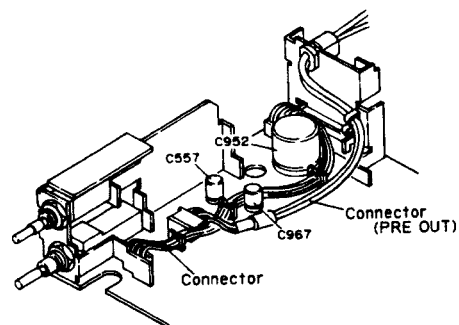
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

ATTENTION

When a repair of this equipment is over, verify the following points:

1. The connector passes under the connector (PRE OUT).
2. The connector passes between C557 and C967.

If the arrangement of connector wire is not made as specified, there are cases where the oscillation is made at the maximum level in bass, treble and volume.



1. OPERATION AND CONNECTION

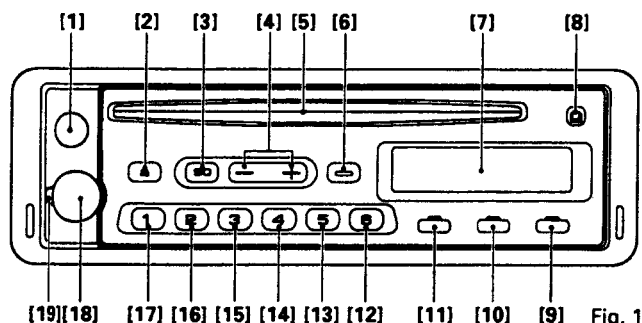


Fig. 1

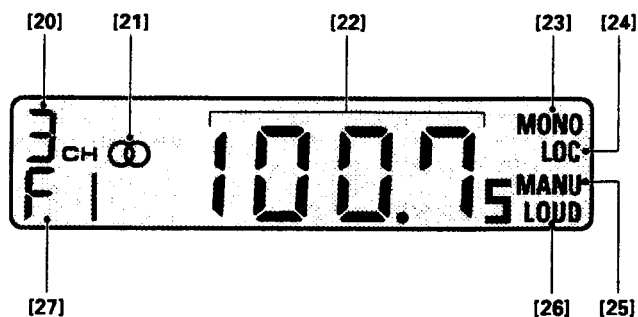


Fig. 2

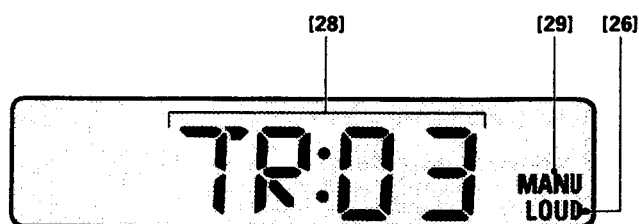


Fig. 3

Precautions

CAUTION: USE OF CONTROL OR ADJUSTMENT OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

CAUTION: THE USE OF OPTICAL INSTRUMENTS WITH THIS PRODUCT WILL INCREASE EYE HAZARD.

- While driving keep your listening volume at a level which does not mask important outside traffic noises, such as emergency vehicles, etc.
- To assure proper operation of the unit, keep the vehicle interior temperature within a normal range using the vehicle's air conditioner or heater.
- Never remove the top case of the unit to attempt check or repairs. If operation of the unit is abnormal, contact your dealer or the nearest Pioneer Service Station.
- If the car's battery is disconnected for any reason, the preset memory will be erased and must be reprogrammed after reconnection of the battery.

In case of trouble

When the unit does not operate properly, contact your dealer or the nearest authorized PIONEER Service Station.

Changing the Tuning Step (ES Model)

Parts Identification (Fig. 1)

[4] Tuning

Changing the Tuning Step

The tuning steps of the AM band for this unit can be switched between 9 kHz and 10 kHz per step. The tuning step should be switched from 9 kHz (which is preset at the factory) to 10 kHz when this unit is used in North America, Central America, or South America.

1. Turn the ignition switch off.
2. While pressing the (+) side of button [4], turn the ignition switch on. It should be noted that changing the tuning steps also deletes frequencies stored in the tuning memories.

Specification		Initial setting	New setting
AM	Tuning steps	9 kHz steps	10 kHz steps
	Frequency range	531 — 1,602 kHz	530 — 1,710 kHz

Connecting the Units

Note:

- This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.
- To avoid shorts in the electrical system, be sure to disconnect the battery \ominus cable before beginning installation.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.
- Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.
- Do not shorten any leads. If you do, the protection circuit may fail to work when it should.
- Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insu-

- Replace fuses only with the types stipulated on the fuse holder.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker \ominus leads are common.
- Speakers connected to this unit must be high-power types possessing minimum rating of 25 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.

(Fig. 4)

1. Antenna jack
2. Black (ground)
To vehicle (metal) body.
3. Red
To electric terminal controlled by ignition switch
(12 V DC) ON / OFF.
4. Orange
To terminal always supplied with power re-
gardless of ignition switch position.
5. Fuse resistor
6. Fuse holder
7. Green
8. Gray
9. Green / black
10. Gray / black
11. Green / red
12. Gray / red
13. Front / left speaker
14. Front / right speaker
15. Rear / left speaker
16. Rear / right speaker
17. With a 2 speaker system, connect to the 2 speak-
ers in the front or the rear.
18. Blue
To system control terminal of the power amp or
Auto-antenna relay control terminal (Max. 300
mA 12 V DC).
19. Rear out
20. Red
21. White
22. Connecting cords with RCA pin plugs
(sold separately)
23. Blue
24. Power amp (sold separately)
25. Use this for connections when you have the
separately available amplifier.

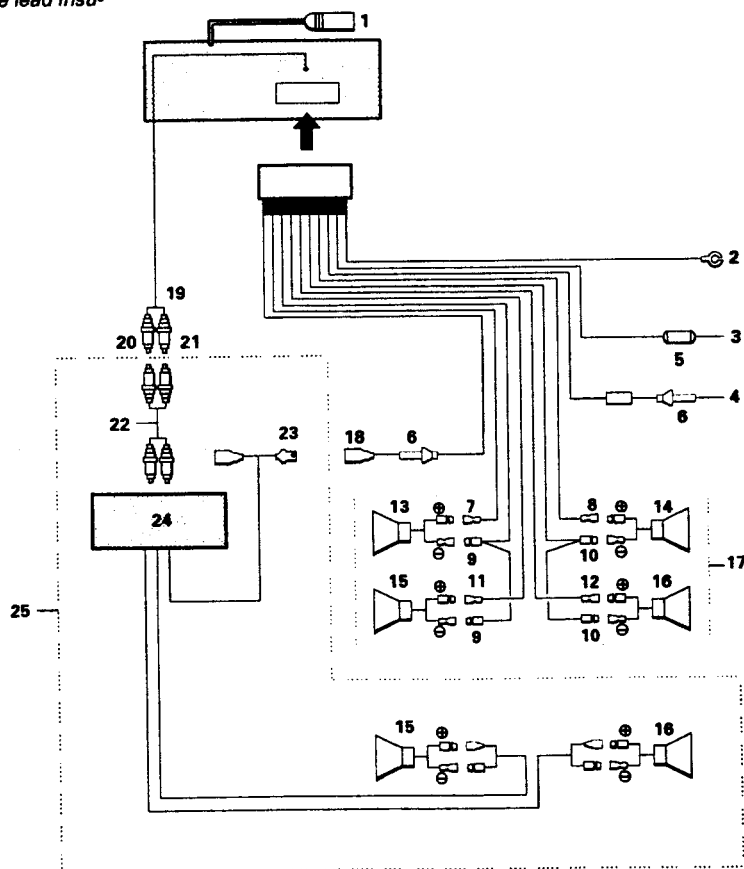


Fig. 4

Using the Removable Front Panel

Parts Identification (Fig. 1)

- [4] Tuning
[8] Detach button

Detaching the Front Panel

- The front panel cannot be removed during disc loading or ejection.
1. Press button [8], and the right-hand side of the panel will eject.
 2. To remove the front panel, pull its right-hand side toward you. (Fig. 5)

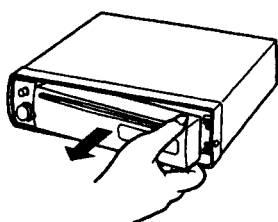


Fig. 5

- Take care not to put pressure on the display or drop the front panel.

Optional Protective Case

A separately sold protective case is available for the detached front panel. This case is highly recommended to protect the front panel from shocks and scratches.

Replacing the Front Panel

With a hollow in the left-hand end of the front panel aligned to projections on the left-hand front wall of the equipment, press the panel's right-hand side against the equipment to put it into place. (Fig. 6) (Fig. 7)

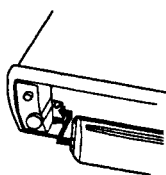


Fig. 6

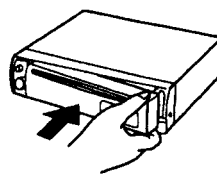


Fig. 7

- Do not place the panel from the right side since it will be locked. To unlock, press button [8].
- When replacing the front panel, do not put pressure on the display or control buttons.

Precautions

- Do not touch the contacts on the front panel or on the unit body, since this may result in poor electrical contact. If dirt or other foreign substances get on the contacts, wipe them with a clean, dry cloth. (Fig. 8) (Fig. 9)

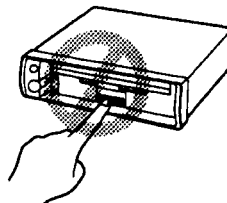


Fig. 8

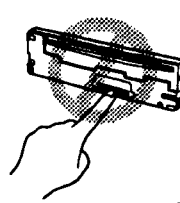


Fig. 9

Precautions When Handling the Front Panel

- Do not leave the front panel in any area exposed to high temperatures or direct sunlight.
- Do not drop the front panel or otherwise subject it to strong impact.
- Do not allow such volatile agents as benzene, thinner, or insecticides to come into contact with the surface of the front panel.
- Never try to disassemble the front panel.

Adjusting Volume and Tone

Parts Identification (Fig. 1)

- [1] Bass / Treble
[2] Eject
[3] Source Selector
[5] Disc Insertion Slot
[6] Loudness
[7] Display
[12], [13] Illumination Switch
[18] Volume / Balance
[19] Fader

Switching Power On

Tuner

Press button [3] to switch the tuner power on. Press button [3] again to switch the power off.

CD Player

When a disc is inserted half-way into the disc insertion slot [5] with its label side upward, the disc is automatically loaded and played. To remove the disc, push button [2].

Changing the source

To change the source, push button [3] with the disc inserted in the slot.

At each press of the button, the source changes as follows: CD player → Tuner → OFF.

Adjusting Audio

Adjusting Volume

Turn the control [18] to the right to raise the volume. Turn the control to the left to lower the volume.

Adjusting the Fader

Turn the control [19] upward to fade sound in the rear speakers. Turn the control downwards to fade sound in the front speakers.

- With a 2 speaker system, set the control in a central position.

Adjusting Bass

Turn the control [1] to the right to increase bass. Turn the control to the left to decrease bass.

Adjusting Treble

Pull the control [1] towards you until it clicks. Turn the control to the right while it is in this position to increase treble. Turn it to the left to decrease treble. After adjusting the control, push it back to its original position.

Adjusting Balance

Pull the control [18] towards you until it clicks. Turn the control to the right while it is in this position to fade sound in the left speaker. Turn it to the left to fade sound in the right speaker. After adjusting the control, push it back to its original position.

Using the Loudness Function

Press button [6] for about 2 seconds and the "LOUD" indication will appear on the display. This loudness function lets you enhance both high and low frequencies to give a more natural sound at low volumes. To cancel this function, press button [6] again for about 2 seconds.

Switching Illumination Colour (DEH-44,730,640)

Pressing buttons [12] and [13] simultaneously will turn the illumination into green and amber.

Using the Radio

Parts Identification

Fig. 1

- [3] Source selector
- [4] Tuning / Local seek sensitivity /
Seek, Manual
- [6] Band
- [7] Display
- [9] FM stereo / Mono
- [10] Preset scan /
Best stations memory (BSM)
- [11] Local station
- [12]~[17] Preset

Fig. 2

- [20] Preset number
- [21] FM stereo
- [22] Frequency
- [23] FM mono
- [24] Local station
- [25] Manual
- [26] Loudness
- [27] Band

Switching between Local and DX


Press button [11] to switch between Local and DX (distant) seek tuning. When "LOC" [24] is shown on the display, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning (ES Model)

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Turn on "MANU" [25] by simultaneously pressing the (+) side and the (-) side of button [4].
2. Each press of the (+) side of button [4] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the AM band. Pressing the (-) side of button [4] decreases the frequency. Holding down either side of button [4] changes the frequency at high speed.
- AM frequencies are turned in 10 kHz steps after the tuning steps are changed.

Switching between FM Stereo and Mono

Generally, it is best to allow the "Super Tuner" function to automatically set the optimum listening conditions.  [21] turns on during stereo broadcast is in reception. When there is a large amount of noise, you can press button [9] for clearer mono reception ("MONO" [23] will appear on the display).

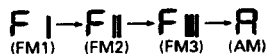
Listening to the Radio

1. Turn on the tuner's power by pressing button [3].

Each time the button is pushed the main unit switches between tuner and power off modes.

- This operation will differ if there is a CD inserted in the CD player. Refer to the section on the source switch on page 11 for details.

2. Press Button [6] to select a band.



3. Use seek tuning to tune in a frequency.

Ensure that "MANU" [25] is not indicated on the display. (If so, turn it off by simultaneously pressing the (+) and the (-) sides of button [4].)

Press either the (+) side or the (-) side of button [4]. When the (+) side is pressed, the tuner will automatically receive high frequencies.

When the (-) side is pressed, it will automatically receive low frequencies.


4. Adjust volume and tone (see page 11).

5. Assign the tuned frequency to one of the Buttons in Bank [12]~[17] (preset memory).

Press and hold down one of the buttons in Bank [12]~[17] for at least 2 seconds. The frequency is assigned to the selected button when the preset number [20] stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and six AM stations can be assigned to the preset memory buttons in Bank [12]~[17].

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [12]~[17], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [6] and select a band.
2. Hold down button [10]. After about 2 seconds, BSM search will start. At this time, "----" will flash on the display.
3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [12]~[17].
- At the end of the BSM search, the displayed frequency is that assigned to button  of Bank [12]~[17].
- You can cancel BSM search by pressing button [10] again.
- If there are fewer than 6 strong stations in the area, some of the buttons in Bank [12]~[17] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.
- BSM search may take as long as 30 seconds in areas where there are few strong stations.

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press the button [10] and the preset number [20] flash. Each station assigned to the buttons in Bank [12]~[17] will be automatically tuned in for about 8 seconds.
2. When you hear a station that you like, press button [10] again to cancel preset scan tuning and remain at that station.

6. Once a frequency is assigned to a Button in Bank [12]~[17], you just need to press that Button to tune it in.

This also causes the number of the button pressed to appear at Position [20] on the display.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has 4 seek tuning sensitivity levels for FM and 2 levels for AM to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [6] to select a band.
 2. Hold down the button [11] for more than 2 seconds, and the display will show you the current local seek sensitivity (Example: "LOC2") for about 5 seconds.
 3. While the local seek sensitivity remains on the display, press the (+) side of button [4] to increase the sensitivity level, and the (-) side to decrease the level as shown below.
- FM : LOC1 = LOC2 = LOC3 = LOC4
AM : LOC1 = LOC2
- The LOC4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.
- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

Playing Compact Discs

Parts Identification

Fig. 1

- [2] Eject
- [3] Source selector
- [4] Track number search /
Fast forward, Reverse
- [5] Disc insertion slot
- [7] Display
- [14] Random play
- [15] Music repeat
- [16] Highlight scan
- [17] Pause

Fig. 3

- [26] Loudness
- [28] Track number
- [29] Manual

Discs

- Only use compact discs (optical digital audio discs) bearing the mark shown below. (Fig. 10)



Fig. 10

- Be sure never to touch the signal surface when handling discs. Pick up discs by grasping the outer edges or the edge of the hole and the outer edge. (Fig. 11) (Fig. 12)

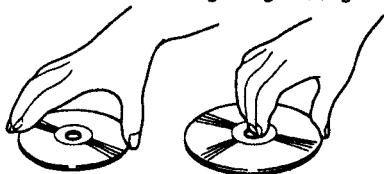


Fig. 11

Fig. 12

- Do not affix paper or tape, and avoid scratching the side of the disc which contains the label (contents of disc).
- The disc revolves at high speed within the player unit, so defective (cracked or badly bent) discs should not be used.
- Dust and/or finger smudges will have no direct effect on the signal recorded on the disc, but dirt can decrease the amount of light reflected from the recorded surface, thus affecting sound quality. If the disc should become soiled, gently wipe the surface with a soft lint-free cloth, wiping from the center of the disc to the edge. (Fig. 13)

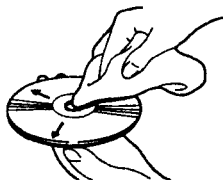


Fig. 13

- Do not use record sprays or antistatic agents. Such volatile chemicals as benzine and thinner can also damage the surface of the disc and should not be used.
- As with traditional audio records, compact discs are made of plastic. To avoid warping, keep the discs in their cases and do not store them in places exposed to direct sunlight.

Listening to the Compact Disc

1. On inserting the CD, with the label side up, half way into the CD slot [5], it will automatically be set into position and start to play.

The track number [28] indicator will light.

2. Adjust volume and tone (see page 11).

3. To stop CD playback, press button [3] turning the power off.

Pressing the button will change the source as follows: CD Player → Tuner → OFF. Press button [3] again to restart playback. It will play from close to where it was previously stopped.

4. To remove or change discs, press button [2].

When the disc is ejected, pressing it will cause it to be set into position again, and playback to start.

Note:

- In order to protect the disc, eject it after it has stopped rotating. The timing of ejection may differ according to the disc.
- If a disc can only be inserted halfway, or if the disc does not play after being loaded, something may be wrong with the disc. Eject the disc by pressing button [2], and check it. If it is all right, insert it again.

- Insert the disc with its label (printed) side facing up. If the disc is inserted with the label side facing down, it will not play, and the recorded side may be damaged.
- Do not insert 2 discs into the slot at the same time. This may cause a malfunction.
- Do not leave an ejected disc in the insertion slot for extended periods since direct sunlight can cause warping. Always return discs to their cases and store in areas not exposed to direct sunlight. (Fig. 14)



Discs should not be left like this for extended periods.

Fig. 14

- Do not leave an ejected 8-cm CD in the slot while driving. The vibration may make it drop out.
- When driving on an uneven road, the player may not reproduce every sound property.

Condensation

- During winter the inside of the vehicle may be very cold. If the heater is turned on and the player is used soon after, the disc or optical parts (prism, lens, etc.) may become misted up. If the disc is misted up, wipe it with a soft cloth. If the optical parts are misted up, wait for about an hour for them to warm up. They will return to their normal condition.

Track Number Search

The desired track on the disc currently being played can be selected by track (or song) number.

1. Ensure that "MANU" [29] is not indicated on the display. If so, turn it off by simultaneously pressing the (+) side and the (-) side of button [4].
2. Use the button [4] to select a track. Pressing the (+) side increases the track number [28], and pressing the (-) side decreases it. Holding the button down continuously increases or decreases the track number.

Using Fast Forward and Reverse

1. Press simultaneously both (+) and (-) sides of the button [4] "MANU" [29] will appear on the display. At this time the display will show the amount of elapsed disc play time (Example: "01'05'").
 2. Press the (+) side of button [4] for fast forward, and the (-) side for reverse.
- Sound is output during fast forward and reverse operations.
 - When a disc in which there are several seconds between tracks is used, the amount of elapsed disc-play time is shown, for example, as "-02'", "-01'" and "-00'".

Pausing

1. Press button [17] to pause during disc playback (Track number [28] will change to "----").
 2. Press button [17] again to release pause.
- It is possible to select music even during pause by using the track number search ("----" [28] will change to Track number, while the music is being selected). When the selection is completed, the playback will be paused at the beginning of the music.

Using Highlight Scan

Highlight Scan is designed to enable you to conveniently scan all pieces of music contained in the disc by playing 10 seconds each at your designated point of time after the start of the music. The starting time of play is set at one minute in factory. Therefore, the Highlight Scan begins one minute after the start unless you designate it otherwise.

When you do not want to change the factory-set time:

1. Pressing button [16] ("SC" will appear on the display).
 2. The contained pieces of music will be played in sequence for 10 seconds each one minute after the beginning.
 3. Press button [16] again when your selected piece comes, and it will continue to play. At this point, the Highlight Scan discontinues to operate.
- The previous function automatically resumes when a piece of music with which Highlight Scan began returns.

Changing the Starting Time of Highlight Scan

When you want to set the starting time of the Highlight Scan to 30 seconds:

1. Indicate "MANU" [29] on the display by simultaneously pressing the (+) side and the (-) side of button [4].
 2. Keep pressing either (+) or (-) side of button [4] until the numerals reaches 30.
 3. Press button [16] for 2 or more seconds ("SC" will appear on the display). Highlight Scan will begin 30 seconds after the start of the next piece of music.
- The starting time of Highlight Scan can be designated at ten or tens of seconds only. A tenth or tenths of seconds can be disregarded.
 - If a piece of music ends before your designated point of time at which Highlight Scan starts, the scanning is performed for its beginning 10 seconds.
 - If a piece of music lasts less than 10 seconds, so does the Highlight Scan.
 - You may wish to change the starting time longer without suspending the function. You may do so, however, only to a relatively long-playing piece of music because, as a matter of course, the time cannot be set so as to come after the end of the music.

Using Music Repeat and Random Play

Music Repeat

1. To repeat the music you are listening to, press button [15] ("RP" will appear on the display).
 2. To cancel music repeat, press button [15] to turn off "RP".
- When music repeat is not operational, the whole disc will be played repeatedly.

Random Play

1. To play music randomly, press button [14] ("Rd" will appear on the display). Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
 2. To cancel random play, press button [14] to turn off "Rd".
- *Since selections are played in random order, the same selection may be played twice in succession.*

Error Mode

Should an abnormality occur — for example, the built-in CD Player cannot be operated, or the music stops during CD playback — the display of this unit will indicate an error mode. (Example: "E-10")

While the unit is in error mode, a number will be displayed indicating the cause of the error, so please check the items listed below. If you cannot fix the problem after checking the cause of the error, please contact your dealer or your nearest Pioneer service center.

HEAT indicator

To prevent deterioration in the semiconductor laser from overheating, playback of a CD will stop when the temperature surrounding of this unit rise during play. When this occurs, "HHHH" will be indicated on the display. Please wait until the temperature drops.

Display	Cause	Treatment
11, 12	Dirt or a scratch on the disc stops the laser beam from being able to focus.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
14	An unrecorded compact disc (CD-R), can be recorded on once is being used.	When you use a CD-R, load one that has been recorded on.
30	Dirt or a scratch on the disc hinders the track number search function.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
10, 12, A0	Electrical or mechanical system fault.	Turn the car ignition switch OFF, then ON again, or change to other sources except CD playback, and then to CD playback again. If the error indication does not disappear, contact your dealer or your nearest Pioneer service station.

Using the Clock Display

Parts Identification (Fig. 1)

- [3] Clock
- [7] Display
- [16] Minute Adjustment
- [17] Hour Adjustment

Displaying the Time

The clock is displayed when button [3] is pressed (for more than 2 seconds). Following the same procedure will turn off clock display.

- The clock display can be used only when the main unit is in operation.
- When the clock display is ON, pressing other buttons will release the clock display. The display will be restored approximately 25 seconds after the button operation has been completed.

Adjusting the Time

Adjusting the Hours

Press button [3] till the clock is displayed (for more than 2 seconds). While pressing button [3], press button [17] simultaneously to adjust the hour setting of the clock. Each press of button [17] advances the hour setting by one hour, and holding it down advances the setting at high speed.

Adjusting the Minutes

Press button [3] till the clock is displayed (for more than 2 seconds). While pressing button [3], press button [16] simultaneously to adjust the minute setting of the clock. Each press of button [16] advances the minute setting by one minute, and holding it down advances the setting at high speed.

2.SPECIFICATIONS

General

Power source 14.4 V DC (10.8 — 15.6 V allowable)
 Grounding system Negative type
 Max. current consumption 7 A
 Dimensions (chassis) 178 (W) × 50 (H) × 155 (D) mm
 (nose) 170 (W) × 48 (H) × 14 (D) mm
 Weight 1.5 kg

Amplifier

Continuous power output is 10 W per channel min. into 4Ω, both channels driven 50 to 15,000 Hz with no more than 5% THD.
 Max. power output 25 W × 2/15 W × 4 (EIAJ)
 Continuous power output 11 W × 2 (1% dist. at 1 kHz)
 Load impedance 4Ω (4 — 8Ω allowable)
 Preout output level/
 output impedance (pre out) 500 mV/1 kΩ
 Tone controls (bass) ±10 dB (100 Hz)
 (treble) ±10 dB (10 kHz)
 Loudness contour +10 dB (100 Hz), +6.5 dB (10 kHz)
 (volume: -30 dB)

CD player

System Compact disc audio system
 Usable discs Compact disc
 Signal format Sampling frequency: 44.1 kHz
 Number of quantization bits: 16; linear
 Frequency characteristics 5 — 20,000 Hz (±1 dB)
 Signal-to-noise ratio 94 dB (1 kHz) (IEC-A network)
 Dynamic range 90 dB (1 kHz)
 Number of channels 2 (stereo)

3. DISASSEMBLY

●Case

- 1.Remove the two screws.
- 2.Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

●Detach Grille Assy

- (DEH-44/US,DEH-730/UC,DEH-720/US,DEH-640/ES)
- 1.Press the detach button, and then pull detach grille assy.

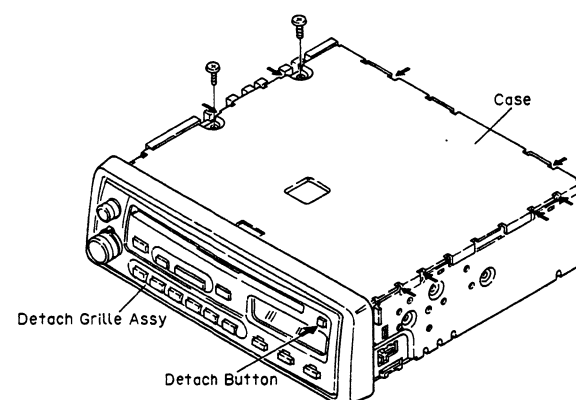


Fig.15

FM tuner

Frequency range (ES) 87.5 — 108 MHz
 (US, UC) 87.9 — 107.9 MHz
 Usable sensitivity 11 dBf (1.0μV/75Ω, mono, S/N: 30 dB)
 50 dB quieting sensitivity 16 dBf (1.7μV/75Ω, mono)
 Signal-to-noise ratio 70 dB (IEC-A network)
 Distortion 0.3% (at 65 dBf, 1 kHz, stereo)
 Frequency response 30 — 15,000 Hz (±3 dB)
 Stereo separation 40 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range (ES) 531 — 1,602 kHz (9 kHz)
 (US, UC, ES) 530 — 1,710 kHz (10 kHz)
 Usable sensitivity 18μV (25 dB) (S/N: 20 dB)
 Selectivity 50 dB (±9 kHz)
 50 dB (±10 kHz)

Note:

Specifications and the design are subject to possible modification with-out notice due to improvements.

●Panel Assy (Fig.15)

(DEH-44/US,DEH-730/UC,DEH-720/US,DEH-640/ES)

- 1.Remove the three knobs.
- 2.Remove the screw A.
- 3.Disconnect the three stoppers indicated by arrow.
- 4.Disconnect the connector(A).
- 5.Remove the panel assy.

●CD Mechanism Module (Fig.16)

(DEH-44/US,DEH-730/UC,DEH-720/US,DEH-640/ES)

- 1.Remove the four screws B.
- 2.Disconnect the connector(B).
- 3.Remove the CD mechanism module.

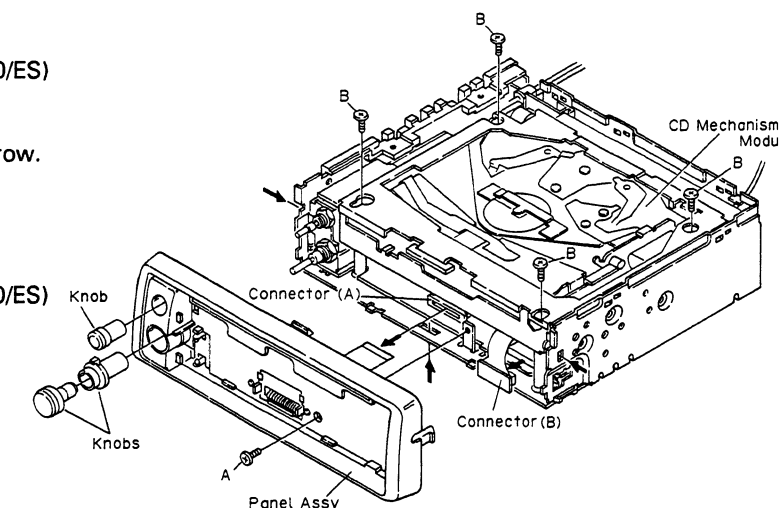


Fig.16

●Grille Assy (DEH-520/UC,DEH-440/ES)

- 1.Remove the three knobs.
- 2.Disconnect the three stoppers indicated by arrow.
- 3.Disconnect the connector(A).
- 4.Remove the grille assy.

●CD Mechanism Module (DEH-520/UC,DEH-440/ES)

- 1.Remove the four screws B.
- 2.Disconnect the connector(B).
- 3.Remove the CD mechanism module.

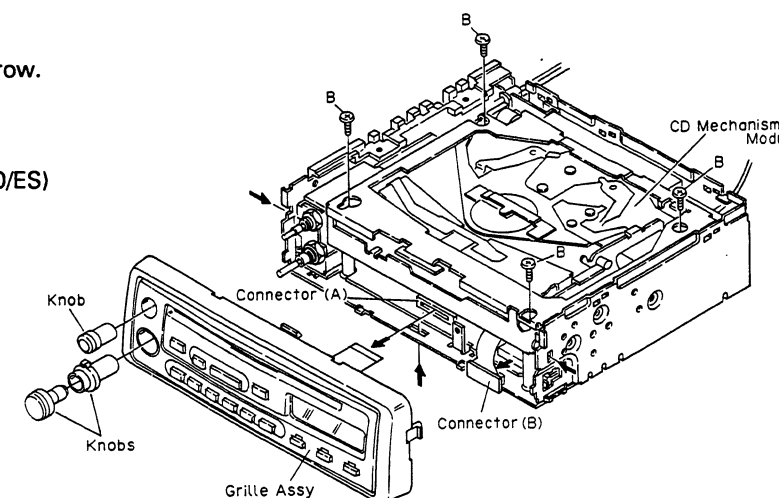


Fig.17

●Chassis Unit

- 1.Remove the two screws C and the three screws D, and then remove the heat sink.
- 2.Remove the two screws E, and then remove the holder.
- 3.Stretch the four claws.
- 4.Remove the chassis unit.

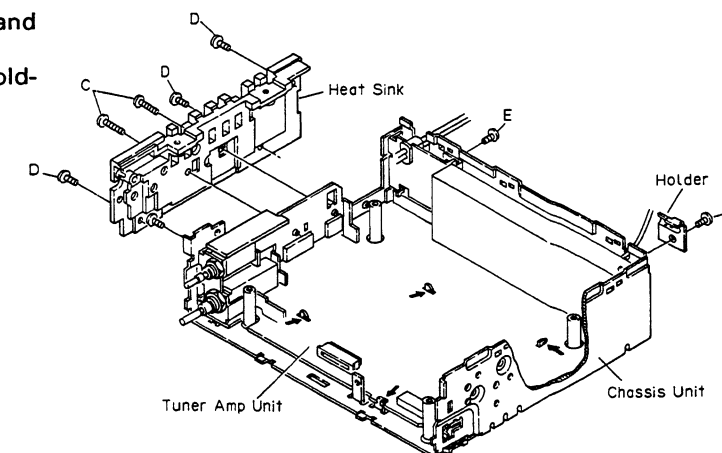


Fig.18

4. BLOCK DIAGRAM

●DEH-44/US

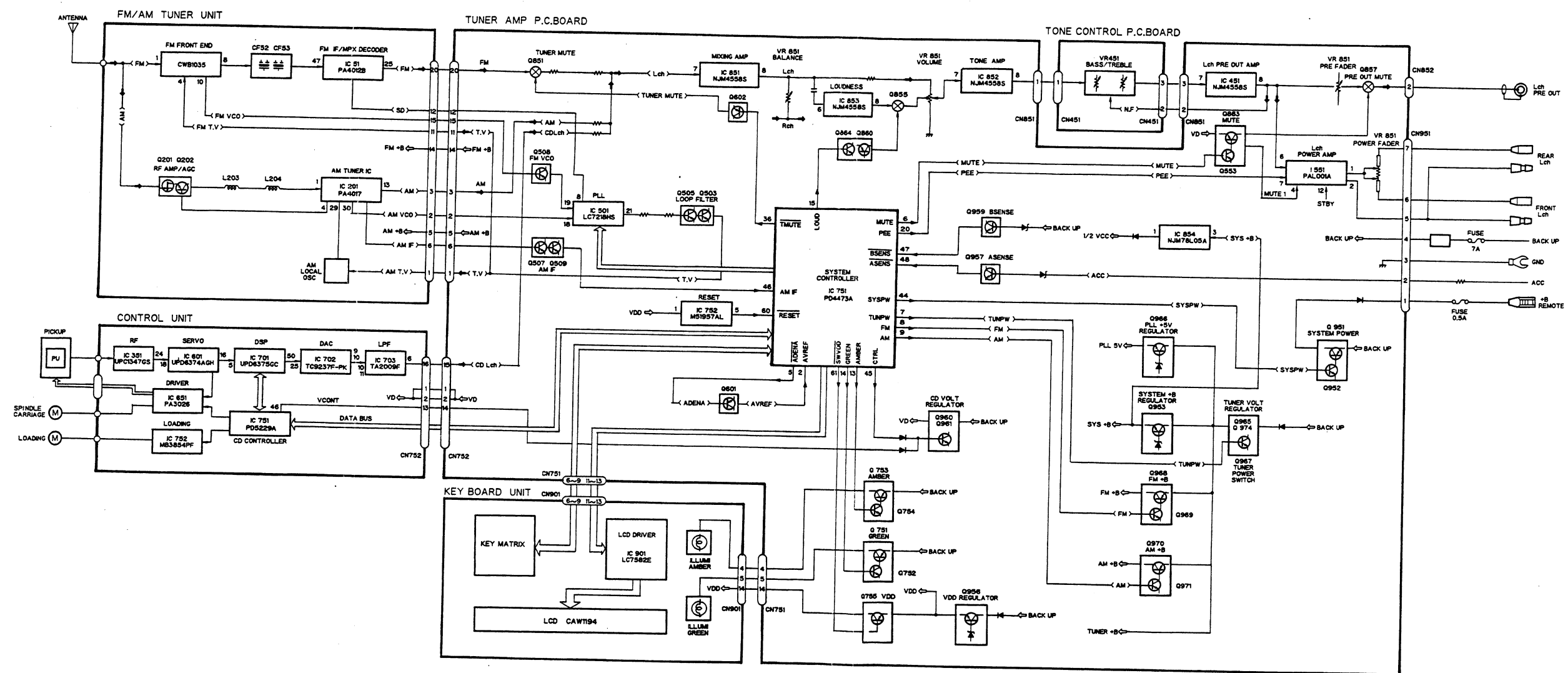


Fig. 19

5. ADJUSTMENT

5.1CD ADJUSTMENT

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFOUT (approx. 2.5V) instead of GND.

If REFOUT and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.

Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.

And since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.

If by accident REFOUT comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.
- Test mode starting procedure
Switch ACC, back-up ON while pressing the 4 and

6 keys together.

- Test mode cancellation
Switch ACC, back-up OFF.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit. Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
*During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.

*The unit will not load a disc.

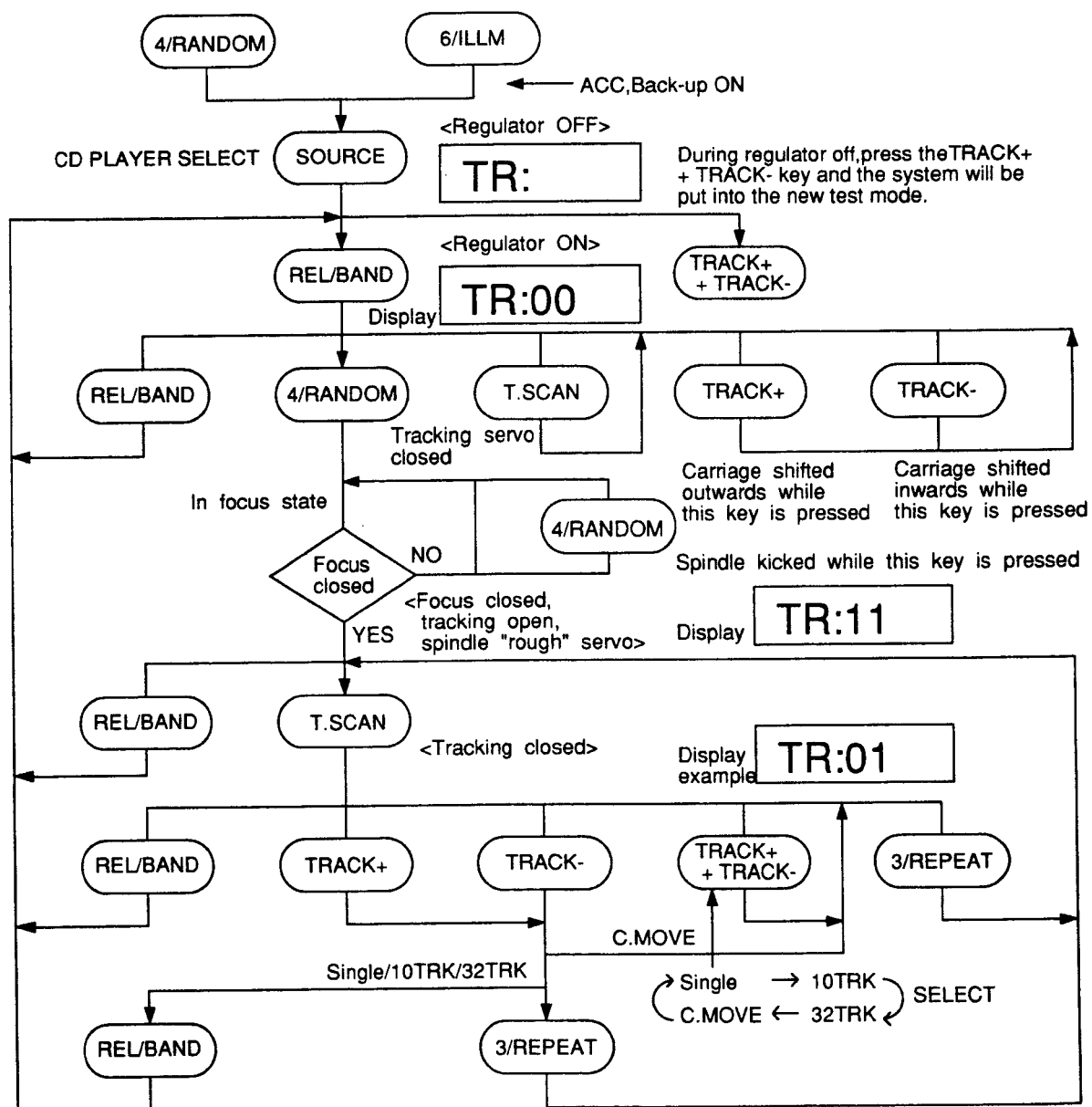
When the unit malfunctions this way, either reposition the light source, move the unit or cover the photo transistor.

- When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the button TRACK+ or the button TRACK- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

Key	Function
REL/BAND	Regulator ON/OFF
TRACK+	FWD Kick
TRACK-	REV Kick
EJECT	EJECT
TRACK+ + TRACK-	Jump mode

Key	Function
T.SCAN	Tracking close
3/REPEAT	Tracking open
4/RANDOM	Focus close
SOURCE	CD ON/OFF

- SINGLE/10TRK/32TRK will continue to operate even after the key is released. Tracking closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is off.



●New Test Mode (aging operation and setup analysis)

The CD, either single or multiple, plays in the normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number in the multi-mode).

During the setup, the CD software operation status (internal RAM and C-point) is displayed.

The software on the head unit side does not involve any special problem but runs normally.

(1) How to Put in the NEW TEST Mode

See the test mode flow chart page 14.

(2) Relations of keys between TEST and NEW TEST Modes.

P-BUS Commands	Keys	Test Mode Regulator OFF	Regulator ON	New Test Mode Play in progress	New Test Mode Error Protection } Talking place
B0	REL/ BAND	Regulator ON	Regulator OFF	REL/BAND	Time of occurrence } Cause of error } Selected
B1	TRACK+	—	FWD-KICK	TRACK+	—
B2	TRACK-	—	REV-KICK	TRACK-	—
B3	T.SCAN	—	TRACKING CLOSE	T.SCAN	—
B4	3/REPEAT	—	TRACKING OPEN	3/REPEAT	—
B5	4/RANDOM	—	FOCUS CLOSE	4/RANDOM	—
B6	—	—	FOCUS OPEN	—	—
B7	—	—	Jump-OFF	—	—
B8	TRACK+ TRACK-	To new Test Mode	Jump-Mode selected	FF REV	Occurrence T.No } Time of occurrence } Selected

Operations, such as EJECT, CD ON/OFF, etc. are to be performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail
40	ELECTRIC	PLAY	FOK=L100ms	Put out of focus
41	ELECTRIC	PLAY	LOCK=L100ms	Spindle unlocked
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Subcode fails to read
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated

*The error code is identical with those in the normal mode.

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out
03	Carriage moving on the external circumference	10-second time out
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock subcode } Waiting	Failure to lock, Subcode failed to read out of focus
19	End	None

(5) Example of 7-segment Display.
(a) SET UP in progress

```

TRACK MIN SEC
 11  11  11   While in the TEST MODE, a status number is indicated in TNO, MIN and SEC.
TRACK
 11
MIN SEC
 11  11

```

(b) Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the multi mode.
(c) Protection/Error upon occurrence

ERROR-XX While in the error mode, an error number is displayed in MIN and SEC.

Select the display with the REL/BAND key.

```

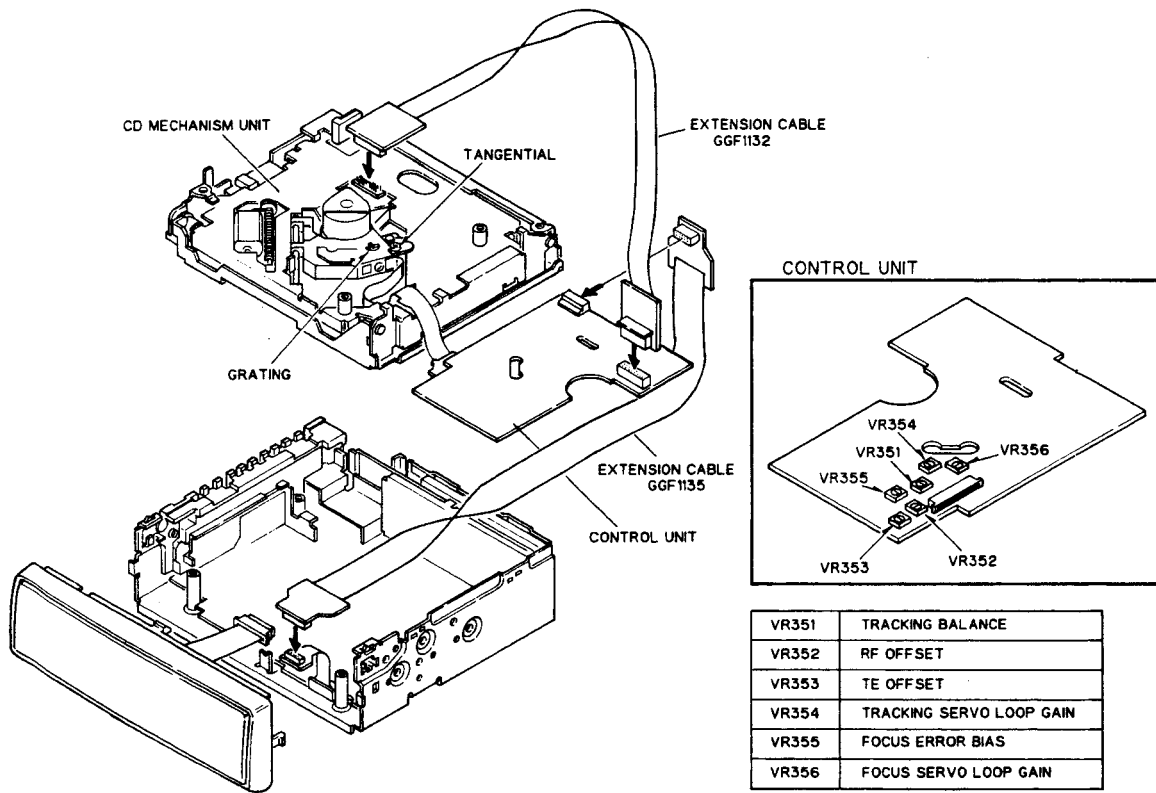
TRACK MIN SEC
 10  40  05   While in the PLAY MODE, an absolute time is indicated in TNO, MIN and SEC.
TRACK
 10
MIN SEC  } Select the display with the TRACK +/- key.
 40  05

```

● Measuring Equipment and Jigs

Adjustment	Measuring equipment&jigs
Grating Adjustment	Oscilloscope,clock driver,grating adjustment filter (bandpass filter) (GGF-133),AC millivoltmeter TCD-782 (or SONY TYPE4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tangential Skew Check	Oscilloscope,screwdriver TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Grating Adjustment	Oscilloscope,clock driver,two low-pass filters TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
FE Bias Adjustment	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
RF Offset Adjustment	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
TE Offset Adjustment-1	DC voltmeter Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Balance Adjustment-1	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Focus Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
TE Offset Adjustment-2	DC voltmeter Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070
Tracking Balance Adjustment-2	Oscilloscope TCD-782 (or SONY TYPE 4) Extension Cable:GGF1132,GGF1135,GGF1128,GGF1126,GGF-070

●Adjustment Point



Note:

CD mechanism module can be adjusted without removing control unit.

Fig. 20

● Test Point

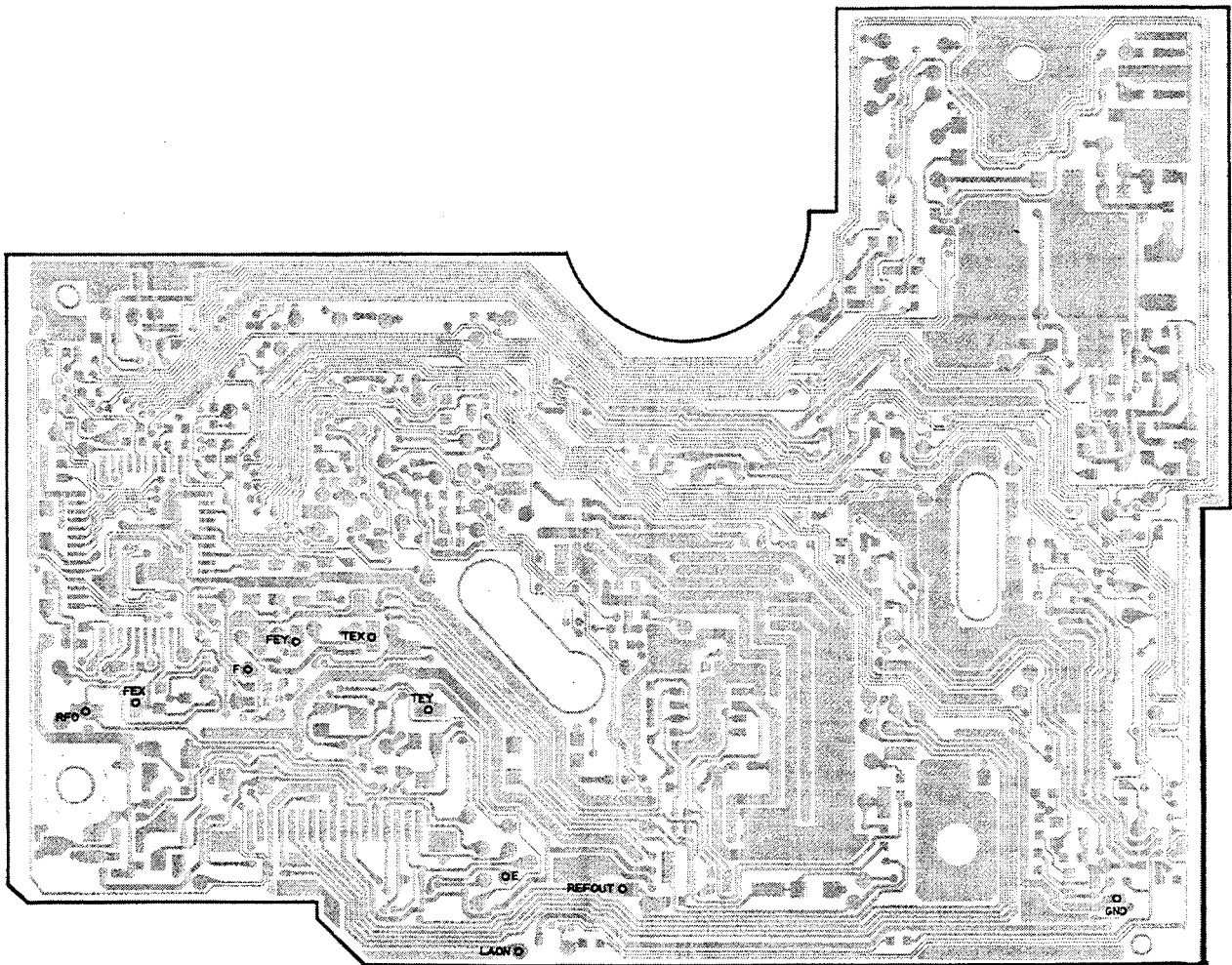


Fig. 21

1 Grating Adjustment (Rough adjustment)

• Purpose:

The grating may need adjustment in a replaced pick-up unit.

• Maladjustment symptoms:

No disc playback; track jumping.

• Measuring equipment / jigs

• Oscilloscope, clock driver, grating adjustment filter (bandpass filter) (GGF-133), AC millivoltmeter.

• Measuring point

• TEY

• Test disc and setting

• TCD-782 (or SONY TYPE 4)
• Test mode.

• Adjustment position

• Pick-up grating adjustment hole.

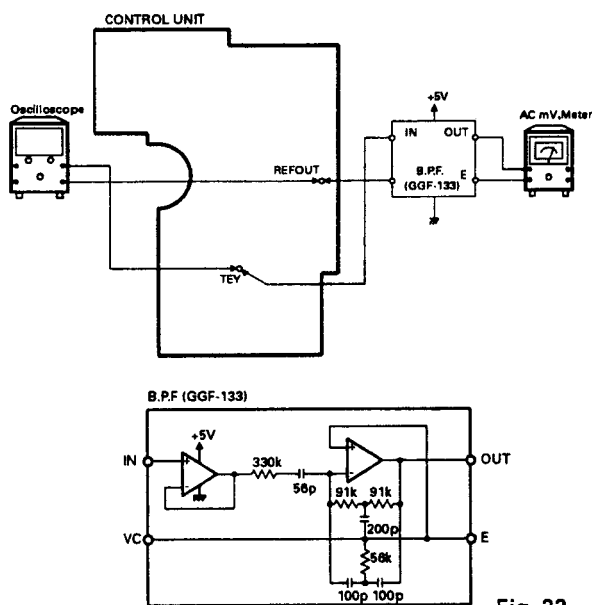


Fig. 22

Adjustment Procedure

1. Switch regulator ON in test mode, and load a disc.
2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (Tune TNO 19). (TYPE 4: TNO 14)
Match with TNO 29 (TYPE 4: TNO 14) when releveling the control unit.
3. Press the **4/RANDOM** key to close focus.
4. While monitoring the TEY filter output by AC millivoltmeter, turn the grating adjustment hole slowly. The AC voltage increases and decreases while turning the screw. Search for the minimum voltage level. (This corresponds to the position where the grating is on a track, and is referred to as the null point.)
5. Then while monitoring TEY by oscilloscope, turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first wave form peak amplitude is reached.

2 Tangential Skew Check

• Purpose:

To check whether tangential skew has been misaligned or not when replacing the pick-up unit.

• Maladjustment symptoms:

No disc playback; track jumping.

• Measuring equipment / jigs

• Oscilloscope, screwdriver

• Measuring point

• RFO

• Test disc and setting

• TCD-782 (or SONY TYPE 4)
• Normal mode

• Adjustment position

• Pick-up tangential adjustment screw

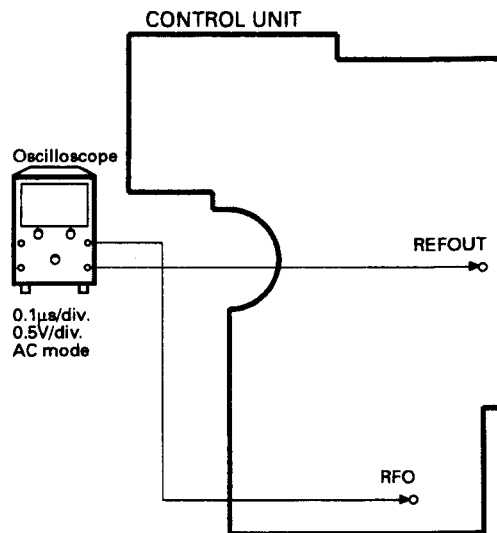
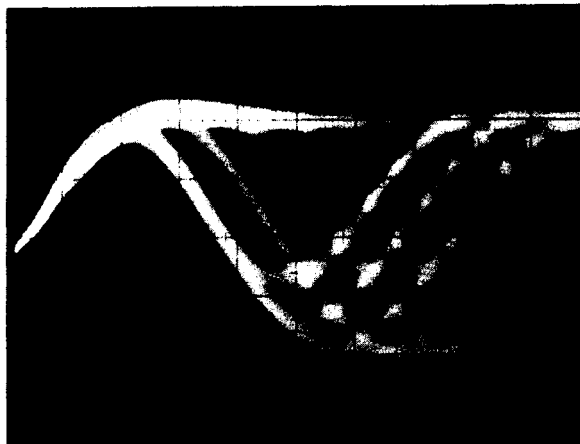


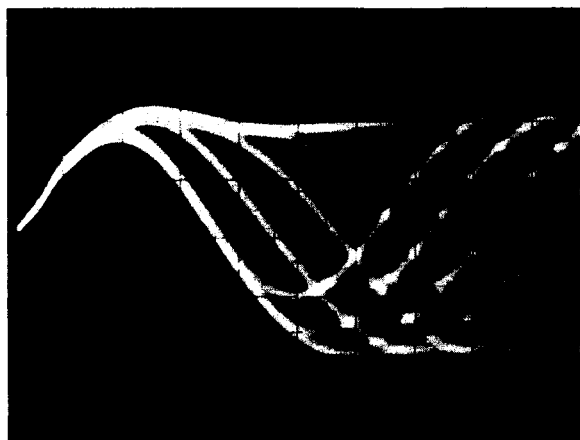
Fig. 23

Adjustment Procedure

1. Check that the pick-up position does not differ from that at the same time of grating adjustment. (TCD-782: TNO 19, TYPE 4: TNO 14)
2. Turn the tangential adjustment screw to obtain a good RF waveform eye pattern. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates, and take the mid-way point as the adjustment point. As a general guide, look for an overall clear waveform, and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig. 24, 25)
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew, also adjust the grating.



NG



OK

AC Mode
0.5V/div.
0.1μs/div.

Fig. 25

3 Grating Adjustment(Fine adjustment)

• Purpose:

The grating may need adjustment in a replaced pick-up unit.

• Maladjustment symptoms:

No disc playback; track jumping.

• Measuring equipment / jigs

• Measuring point

• Test disc and setting

• Adjustment position

• Oscilloscope, clock driver, two low-pass filters

• TEY, ELPF output, FLPF output

• TCD-782 (or SONY TYPE 4)

• Test mode

• Pick-up grating adjustment hole

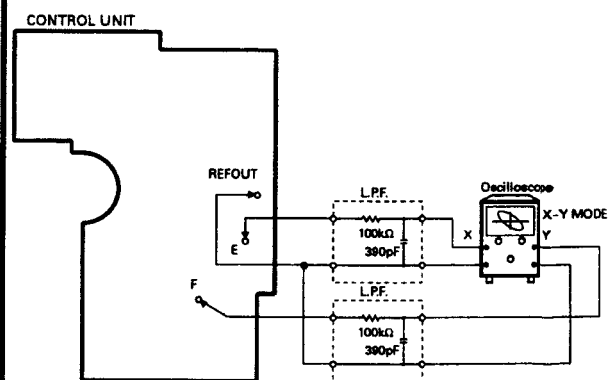


Fig. 26

Adjustment Procedure

1. Switch regulator ON in test mode, and load a disc.
2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (Tune TNO 19). (TYPE 4: TNO 14)
Mutch with TNO 19 (TYPE 4: TNO 14) when releasing the control unit.
3. Press the **4/RANDOM** key to close focus.
4. With the E low-pass filter output connected to the X axis of the oscilloscope, and the F low-pass filter output connected to the Y axis, apply an input in AC mode and observe the Lissajous figure. (Fig. 27-32)
5. Using the driver, adjust the Lissajous figure to a single line (or as close as possible).
6. Switch regulator OFF and remove the filters.

TEY waveform 5ms/div, 0.5V/div.

Null Point

Lissajous figure (AC input)
Horizontal axis E 20mV/div.
Vertical axis F 20mV/div.



Fig. 27

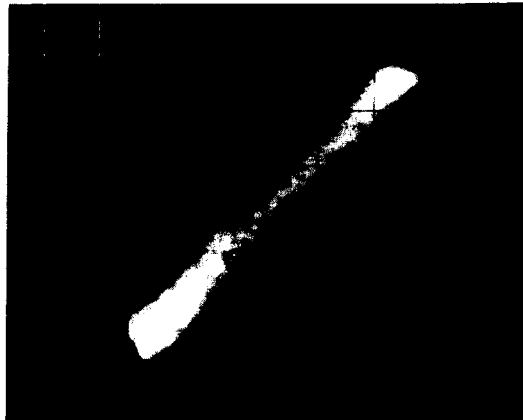


Fig. 28



"Rough" adjustment

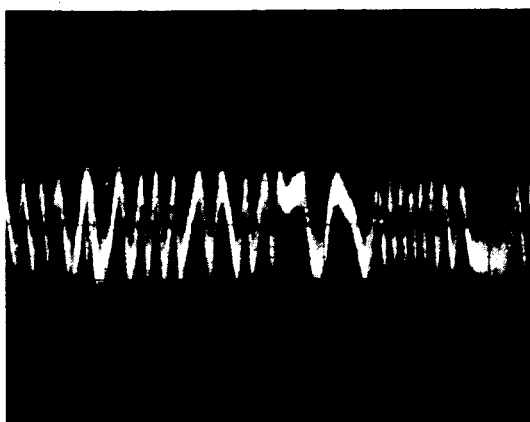


Fig. 29



Fig. 30



Final adjustment



Fig. 31

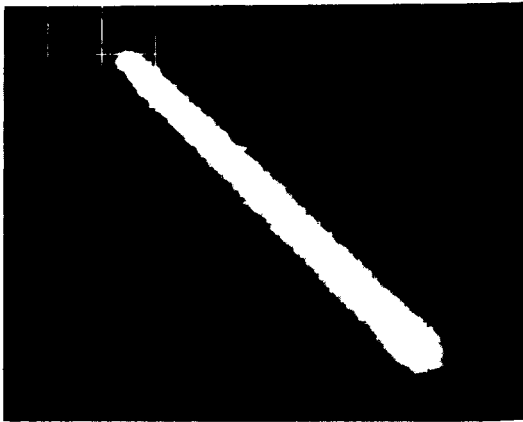


Fig. 32

4 FE Bias Adjustment

- **Purpose:**
To adjust the focus servo bias to an optimum value.
- **Maladjustment symptoms:**
Focus closing difficulty, poor playability.

- | | |
|-------------------------------------|----------------------------|
| • Measuring equipment / jigs | • Oscilloscope |
| • Measuring point | • RFO |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Normal mode |
| • Adjustment position | • VR355(FEB) |

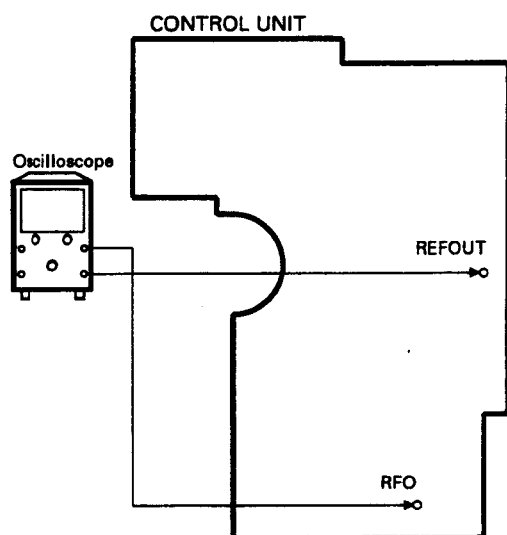
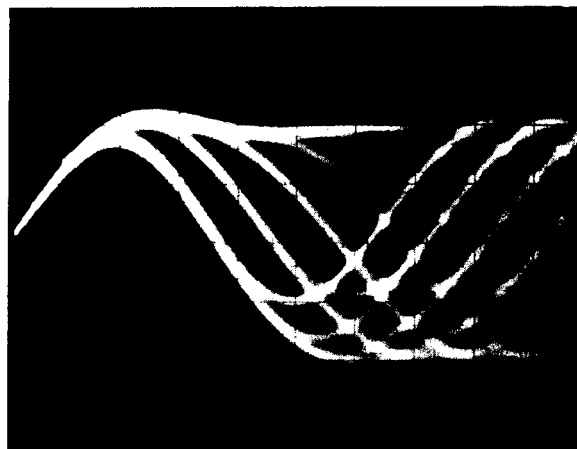


Fig. 33

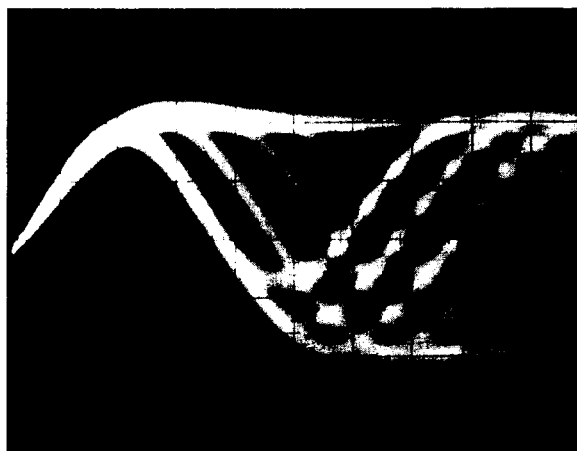
Adjustment Procedure

1. Play in normal mode.
2. Observe RFO in respect to REFOUT in the oscilloscope, and adjust VR355(FEB) to obtain maximum RF and eye pattern. (See Fig. 34, 35)



OK

Fig. 34



AC Mode

Before adjustment

Fig. 35

5 RF Offset Adjustment

- **Purpose:**
To adjust the RF amplifier offset to a suitable value.
- **Maladjustment symptoms:**
Focus closure fails readily.

- | | |
|-------------------------------------|----------------------------|
| • Measuring equipment / jigs | • Oscilloscope |
| • Measuring point | • RFO |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Normal mode |
| • Adjustment position | • VR352(RFO) |

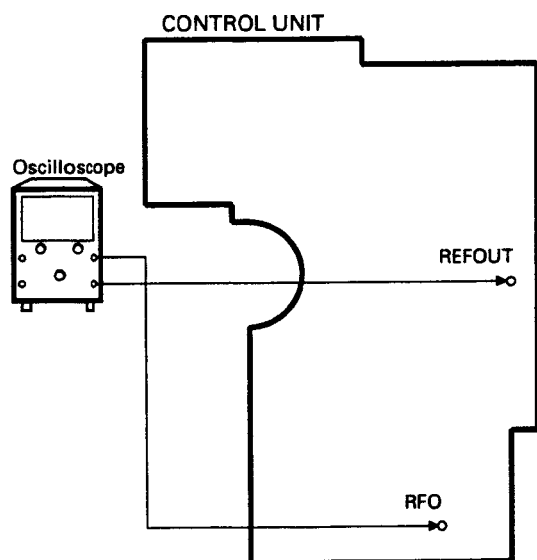
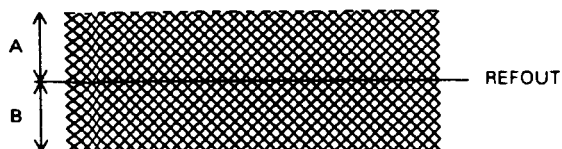


Fig. 36

Adjustment Procedure

1. Play tune TNO 19 in normal mode.(TYPE 4:TNO 14)
2. Use VR352 to adjust the RFO waveform so that REFOUT appears at the center.(A-B must not exceed 100 mV.)



6 TE Offset Adjustment-1

- **Purpose:**
To adjust the electrical offset of the tracking servo to zero
- **Maladjustment symptoms:**
Search times too long, carriage run-away.

- | | |
|-------------------------------------|----------------|
| • Measuring equipment / jigs | • DC voltmeter |
| • Measuring point | • TEY |
| • Test disc and setting | • No Disc |
| | • Test mode |
| • Adjustment position | • VR353(TEO) |

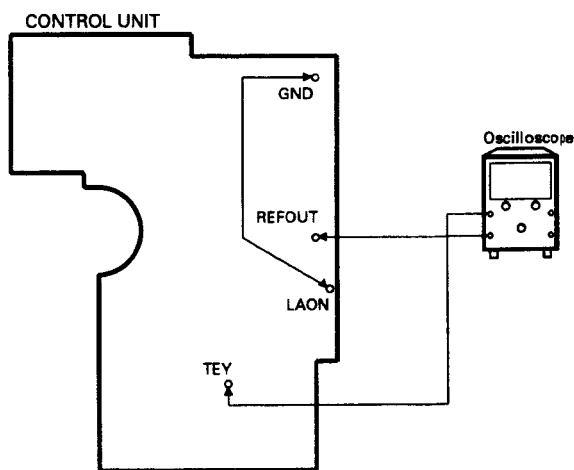


Fig. 37

Adjustment Procedure

1. Connect LAON to GND.
2. Switch regulator ON while in test mode.
3. Using VR353(TEO), adjust the TEY output DC voltage in reference to REFOUT to a value of $0 \pm 25\text{mV}$.
4. Switch regulator OFF.

7 Tracking Balance Adjustment-1

- **Purpose:**
To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
Search times too long, poor playability, carriage run-away.

- | | |
|-------------------------------------|-------------------------------|
| • Measuring equipment / jigs | • Oscilloscope |
| • Measuring point | • TEY (Tracking error signal) |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Test mode |
| • Adjustment position | • VR351 (T.BAL) |

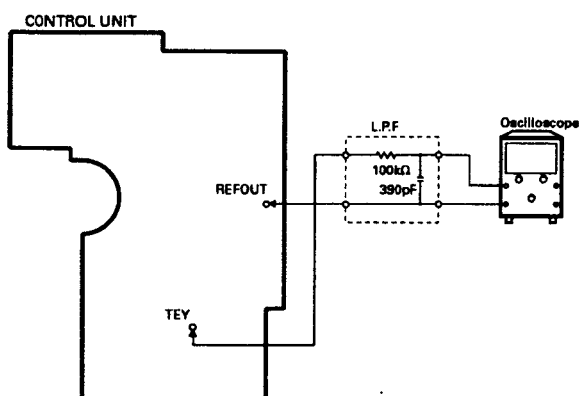
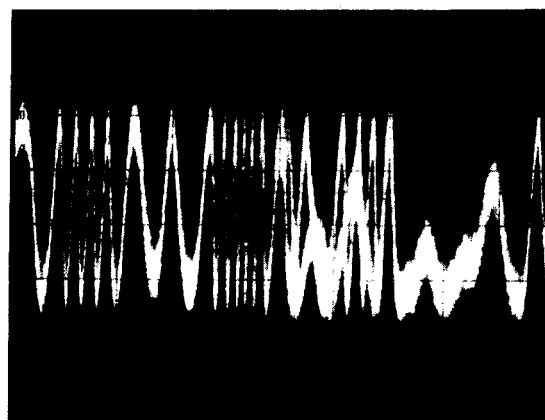


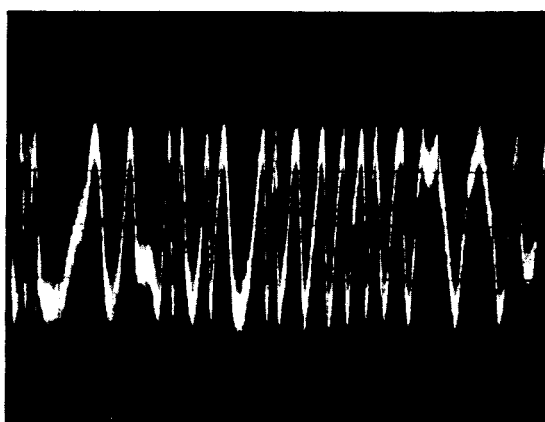
Fig. 38

Adjustment Procedure

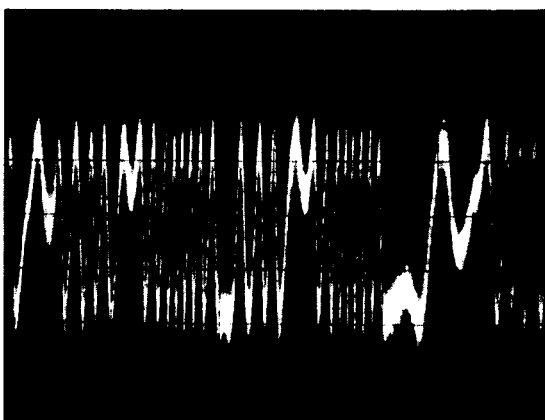
1. Set the test disc (TCD-782). Switch regulator ON.
2. Using the **TRACK+** or **TRACK-** key, move the pick-up to about the center of the signal surface.
3. Press the **4/RANDOM** key to close focus.
4. Using an oscilloscope, observe the TEY signal in respect to REFOUT.
Then adjust VR351 (T.BAL) to set the positive and negative amplitudes to the same levels. (See Fig. 39-41)
5. Switch the power OFF.



+ 5% NG



± 0% OK



- 5% NG

10ms/div.
0.5V/div.
DC Mode

Fig. 41

8 Focus Servo Loop Gain Adjustment

• **Purpose:**
To adjust the focus servo loop gain to an optimum value.

• **Maladjustment symptoms:**
Poor playability, reduced resistance to vibration, focus closure fails readily.

- | | |
|-------------------------------------|--|
| • Measuring equipment / jigs | • Oscillator, gain adjustment filter (GGF-065), dual meter milli-voltmeter |
| • Measuring point | • FEX, FEY |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Normal mode |
| • Adjustment position | • VR356(FG) |

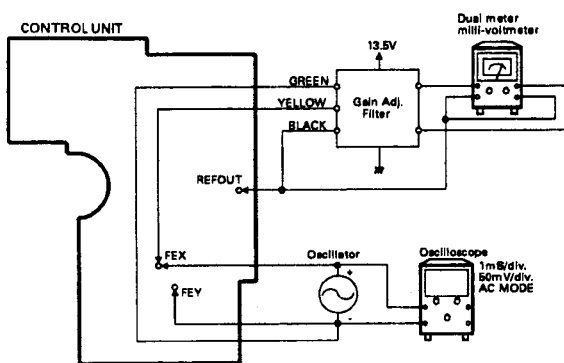


Fig. 42

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 19 in normal mode. (TYPE 4: TNO 14)
3. Set the oscillator to 1kHz, and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR356(FG) to obtain a milli-voltmeter difference of 0 ± 0.5 dB.

9 Tracking Servo Loop Gain Adjustment

• **Purpose:**
To adjust the tracking servo loop gain to an optimum value.

• **Maladjustment symptoms:**
Poor playability, reduced resistance to vibration.

- | | |
|-------------------------------------|---|
| • Measuring equipment / jigs | • Oscillator, gain adjustment filter (GGF-065), dual meter milli-voltmeter. |
| • Measuring point | • TEX, TEY |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Normal mode |
| • Adjustment position | • VR354(TG) |

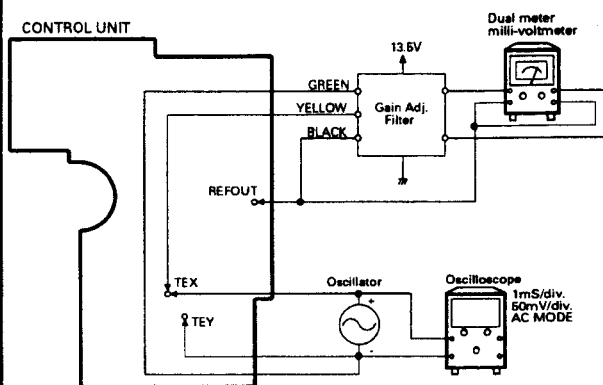


Fig. 43

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 19 in normal mode. (TYPE 4: TNO 14)
3. Set the oscillator to 1.4kHz, and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.
4. Adjust VR354(TG) to obtain a milli-voltmeter difference of 0 ± 0.5 dB.

10 TE Offset Adjustment-2

- **Purpose:**
To adjust the electrical offset of the tracking servo to zero.
- **Maladjustment symptoms:**
Search times too long, carriage run-away.

- | | |
|-------------------------------------|----------------|
| • Measuring equipment / jigs | • DC voltmeter |
| • Measuring point | • TEY |
| • Test disc and setting | • No Disc |
| | • Test mode |
| • Adjustment position | • VR353 |

Adjustment Procedure

Same as for TE offset adjustment-1, but with the DC voltage of the TEY output adjusted to $0 \pm 50\text{mV}$.

The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracing balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

11 Tracking Balance Adjustment-2

- **Purpose:**
To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
Search times too long, poor playability, carriage run-away.

- | | |
|-------------------------------------|----------------------------|
| • Measuring equipment / jigs | • Oscilloscope. |
| • Measuring point | • TEY |
| • Test disc and setting | • TCD-782 (or SONY TYPE 4) |
| | • Test mode |
| • Adjustment position | • VR351 |

Adjustment Procedure

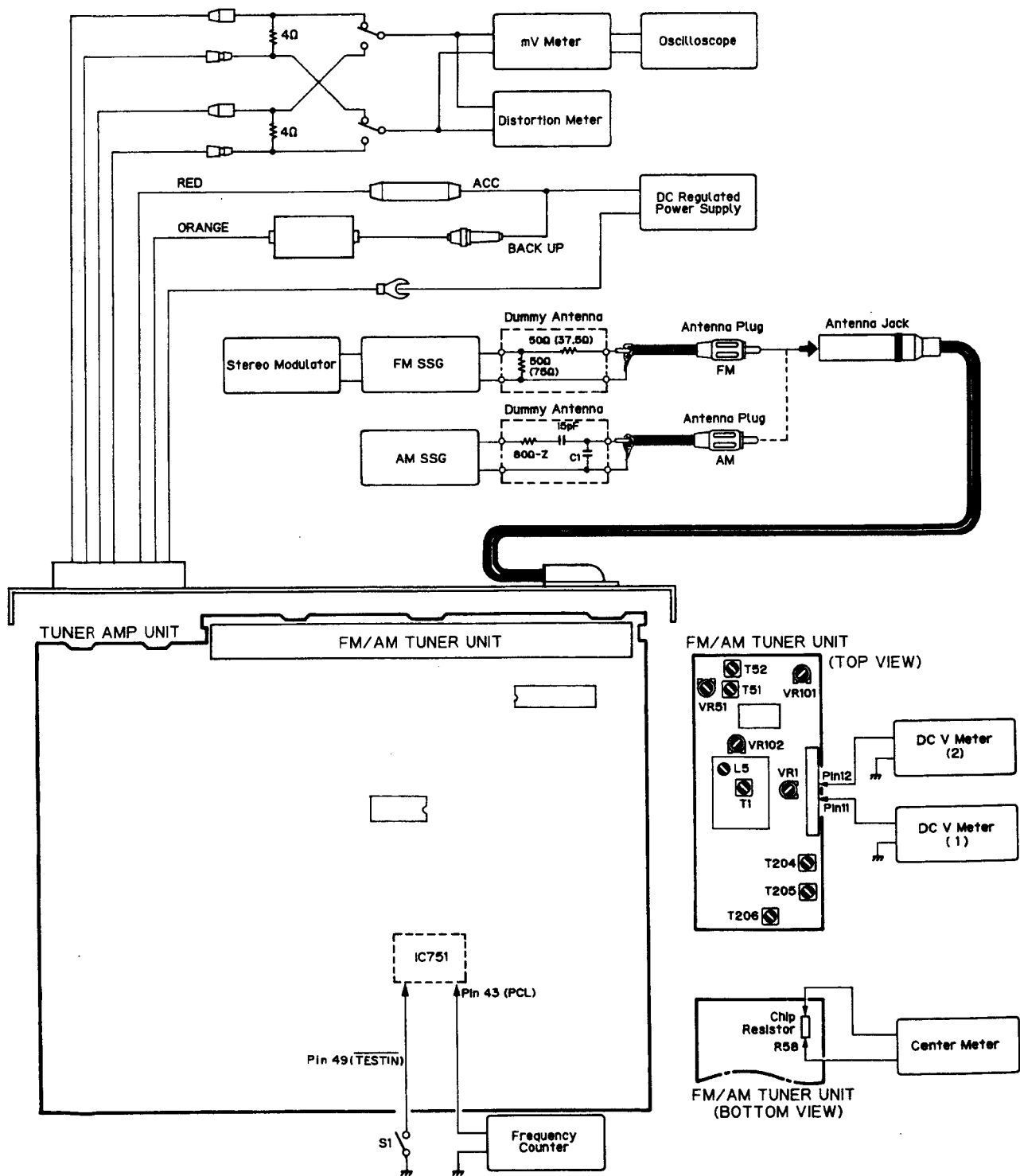
Steps 1 thru 5 same as tracking balance adjustment-1.

6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig. 39-41). If greater than 5%, adjust with VR351.
7. If further adjustment was necessary in step 6, repeat TE offset adjustment-2.

5.2 TUNER ADJUSTMENT

●Connection Diagram

NOTICE:
SELECT C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.



FM Adjustment

*ES Model

#Stereo MOD. : 1kHz,L+R=90%,Pilot=10%,*() : ES Model

	No.	FM SSG(400Hz,100%)		Displayed	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBμV)	Frequency(MHz)		
IF	1	98.1025	60	98.1	T51	Center Meter : 0
Front End	1			107.9 *(108.0)	L5	DC V Meter(1) : 6.2±0.2V
	2			87.9 *(87.5)		Verify that DC V Meter(1) is more than 2.1±0.6V
	3	98.1	8	98.1	T1	Oscilloscope : Optimum Symmetry
	4	98.1#	60	98.1	T1	Distortion Meter : Minimum Rotate T1 less than±90
Soft Mute	1	98.1	60	98.1		mV Meter(1) : AdB
	2	98.1	9	98.1	VR102	mV Meter(1) : A-3dB
ARC	1	98.1#	34	98.1	VR101	mV Meter(1) : Separation 5dB
SD	1	98.1	15	98.1	VR51	DC V Meter(2) : Approx. 5V
	2	98.1	14	98.1		Verify that DC V Meter(2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter(2) : Approx. 5V
	4	98.1	54	98.1		Connect collector of Q2 to GND. Connect DC regulated power supply to pin 3 of FM front end through resistor(330Ω). Add 4.3V from DC regulated power supply. Verify that DC V Meter (2) is approx. 0V.

AM Adjustment

*() : ES Model when tuning step at 9kHz.

	No.	AM SSG(400Hz,30%)		Displayed	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dBμV)	Frequency(KHz)		
Tuning Volt	1			1,710 *(1,602)	-	Verify that DC V Meter(1) is less than 6.5V.
	2			530 *(531)	-	Verify that DC V Meter(1) is more than 2.0V
IF	1	1,000 *(999)	15	1,000 *(999)	T204,205,206	mV Meter(1) : Maximum

Clock Verification

No.	Verification Method
1	BACK-UP→ON,ACC→ON
2	S1 : ON
3	Frequency Counter : 1,048,576Hz±24Hz

● ICs

● Pin Functions (PD4473A)

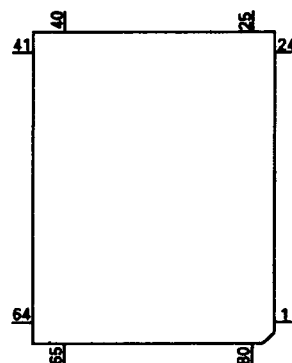
Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	AVREF	I		A/D converter reference voltage
3	VDD			Power supply
4	VPP			PROM write power supply
5	ADENA	O	C	AVREF enable output
6	MUTE	O	C	Mute output
7	TUNPW	O	C	Tuner power control output
8	FM	O	C	FM power control output
9	AM	O	C	AM power control output
10	MUTES	O	C	Mute control output for SK alarm
11,12	NC			Not used
13	AMBER	O	C	Amber (Red) illumination light output
14	GREEN	O	C	Green illumination light output
15	LOUD	O	C	Loudness ON/OFF output
16	DKO	O	C	DK interruption output
17-19	NC			Not used
20	PEE	O	C	Beep tone output
21	NC			Not used
22	SK	I		SK signal input
23	DK	I		DK signal input
24	PDI	I		Data input for PLL IC
25	PCE	O	C	Chip enable output for PLL IC
26	PDT	O	C	Data output for PLL IC
27	PCK	O	C	Serial clock output for PLL IC
28,29	NC			Not used
30	VDIN	I		VD sense input
31,32	NC			Not used
33	GND			GND
34,35	NC			Not used
36	TMUTE	O	NM	Tuner mute output
37-39	NC			Not used
40	BRST	O	C	P-BUS reset output
41	BRXEN	I/O	C	P-BUS reception enable input
42	NC			Not used
43	PCL	O	C	Clock adjustment output
44	SYSPW	O	C	System power supply control output
45	CTRL	O	C	Main power supply control output
46	AMIF	I		AM IF signal input
47	BSENS	I		Back up power sense input
48	ASENS	I		ACC power sense input
49	TESTIN	I		Test program mode input
50	BSRO	I		P-BUS serial pole request input
51	BDATA	I/O	C	P-BUS serial data input/output
52	BSCK	I/O	C	P-BUS serial clock input/output
53	TENBL	I		Test enable input
54	GND			GND
55	XT1			Not used
57	IC			GND
58	XT2			Not used
58	X1			Crystal oscillator connection pin
59	X2			Crystal oscillator connection pin
60	RESET	I		Reset input
61	SWVDD	O	C	Key board unit power supply control output
62	LCK	O	C	Clock output for LCD driver
63	LDT	O	C	Data output for LCD driver
64	LCE	O	C	Chip enable output pin for LCD driver
65-67	NC			Not used
68	SIMK4	I		Model select input 4
69	SIMK3	I		Model select input 3
70	SIMK2	I		Model select input 2
71	SIMK1	I		Model select input 1

Pin No.	Pin Name	I/O	Output Format	Function and Operation
72	SIMK0	I		Model select input 0
73	AGND			Analog circuit GND
74	DSENS	I		Grille detach sense
75	NC			Not used
76	SL	I		Signal level for tuner
77-80	KD4-KD1	I		Key sense input

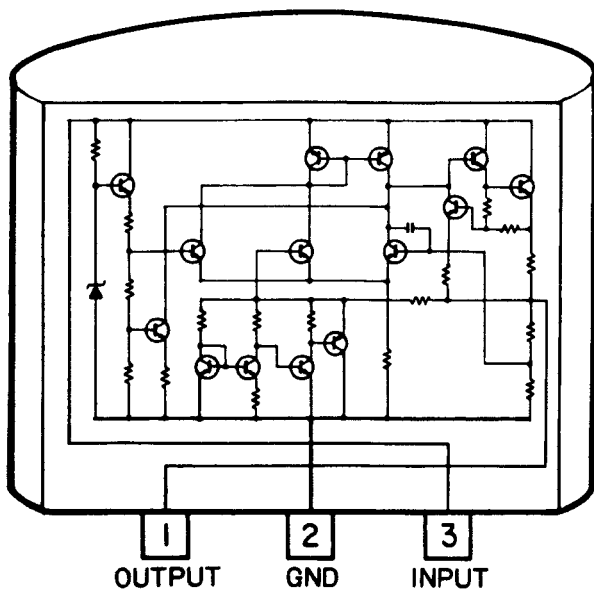
Output Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

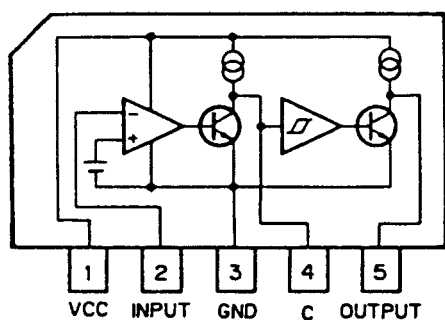
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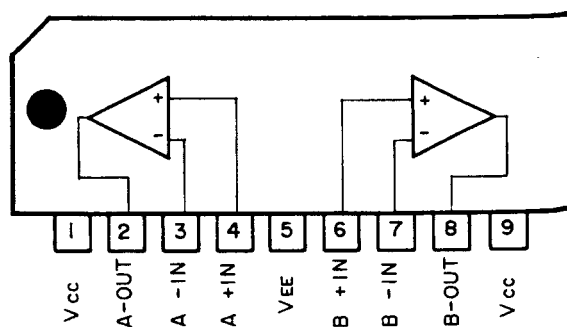
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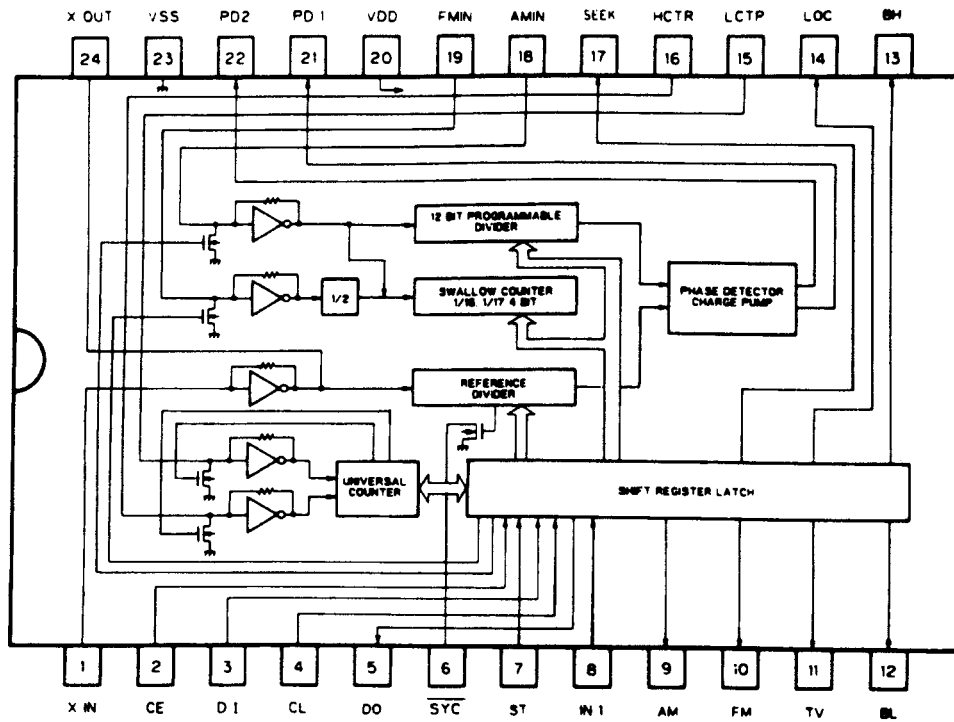
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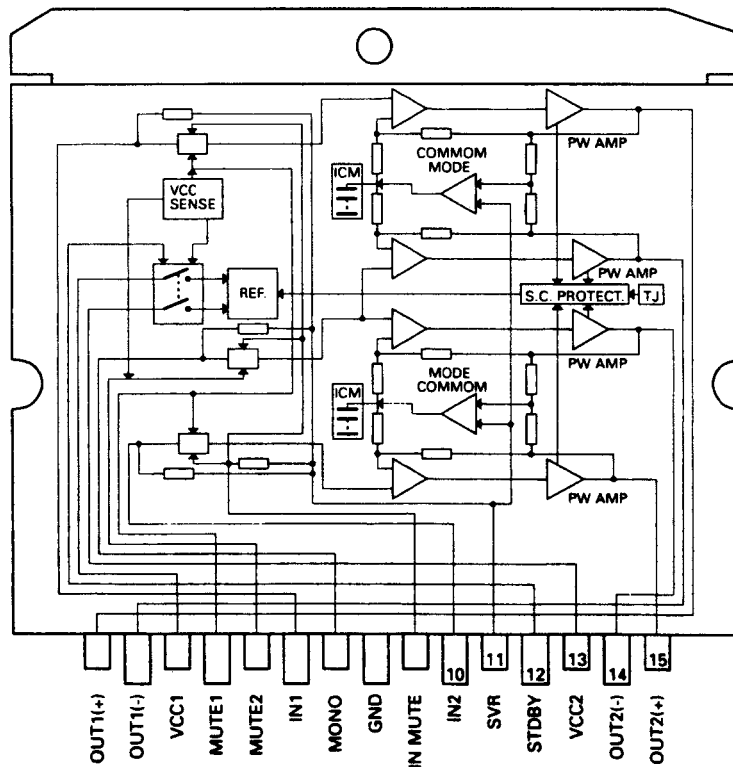
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LC7218HS



PAL001A



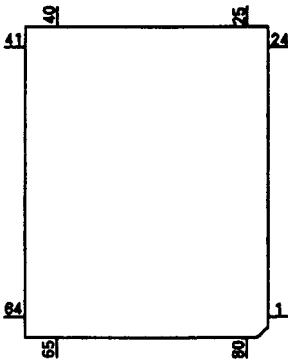
●Pin Functions (PD5229A)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	TEMP	I		Temperature detector
3	VDSENSE2	I		Short sense input
4	DCD	O	NM	Command/data appointment output
5	DCS	O	NM	Chip select output
6	DRDY	I		Ready input
7	DRST	O	NM	Reset output
8	A0	O	NM	Control signal distinguishing data from microcomputer
9	XSCK	O	NM	LSI clock output
10	XSO	O	NM	LSI data output
11	XSI	I		LSI data input
12	STB	O	C	LSI Strobe output
13	RST	O	C	Reset output pin
14	ENDOUT	O	C	Digital output enable signal
15	PEE	O	C	Beep tone output
16,17	NC			Not used
18	BRST	I		Bus communication reset input pin
19	BSRO	O	C	Bus communications service request output pin
20	BRXEN	I/O	C	Bus communication reception enable input pin
21	BSCK	I/O	C	Bus serial clock input/output
22	BSO	O	C	Serial data output pin
23	BSI	I		Bus serial data input
24	EJSW	I		Eject signal input
25	REMIN	I		Remote control pulse input
26	CNVSS			GND
27	RESET	I		Reset input
28	FECNT	O	C	FE output control pin
29	NC			Not used
30	XIN	I		Crystal oscillating element connection pin
31	XOUT	O	C	Crystal oscillating element connection pin
32	VSS			Gnd
33-40	NC			Not used
41	POWER	O	C	CD +5V control
42	CONT	O	C	Servo driver power supply control
43,44	NC			Not used
45	VDSENS	I		VD over voltage sense input
46	VDCONT	O	C	VD control input
47	DSET	O	C	Disc set indicator control output
48	BLGT	O	C	LCD back light control output
49	VMC	O	C	Loading motor driver power supply
50	EJ	O	C	Loading motor EJECT control
51	LOAD	O	C	Loading motor LOAD control
52	NC			Not used
53	DINC	I		Disc insert sense input
54	EJTD	I		Disc eject position sense input
55	CLAMP	I		Disc clamp sense input
56	NC			Not used
57	HOLD	O		Hold control output
58	TBC	O	C	Tracking bank switching output
59	NC			Not used
60	MIRR	I		Mirror detector input
61	LOCK	I		Spindle lock detector input
62	FOK	I		FOK signal input
63	HOME	I		Home position detector input
64-68	NC			Not used
69	OPTSW	I		Digital output ON/OFF input
70	CDMUTE	O	C	CD mute output
71	ADENA	O	C	A/D reference voltage output
72	TESTIN	I		Test program mode input

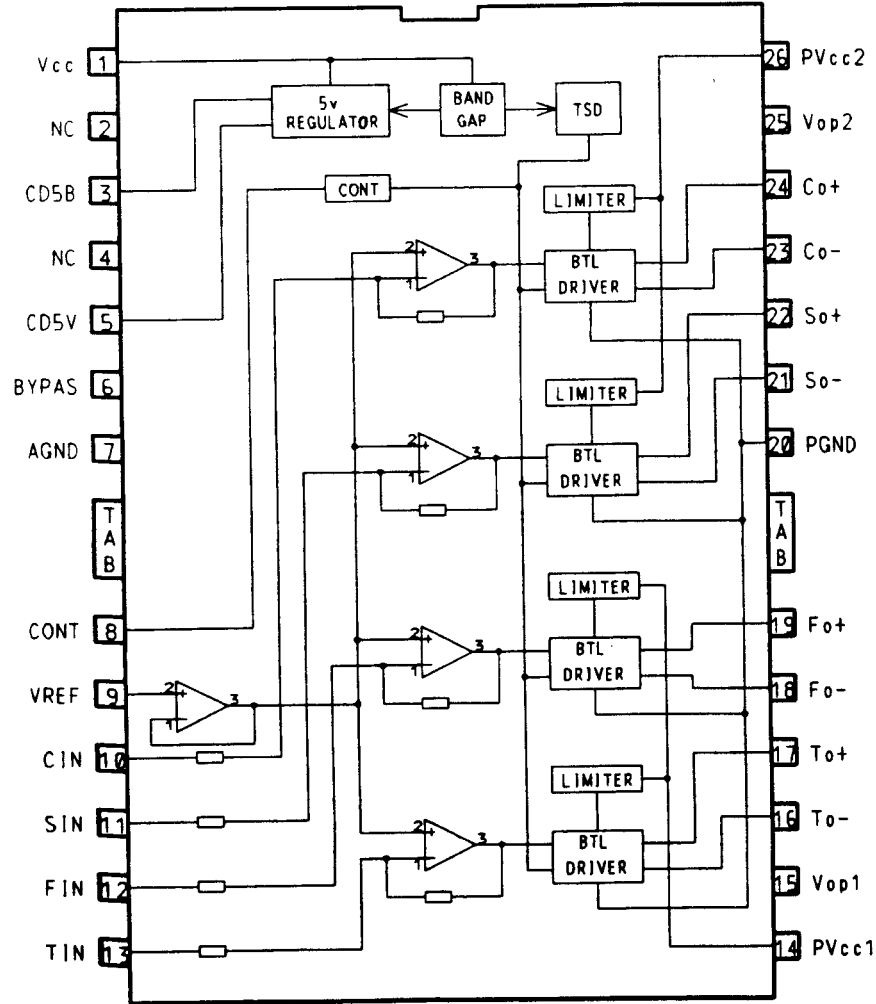
Pin No.	Pin Name	I/O	Output Format	Function and Operation
73	VCC			Back up 5V
74	VREF	I		A/D reference voltage input
75	AVSS			A/D GND
76	CSEL			Compression select
77,78	NC			Not used
79	KD0			Analog key input 0
80	KD1	I		Analog key input 1

Output Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

*PD5229A



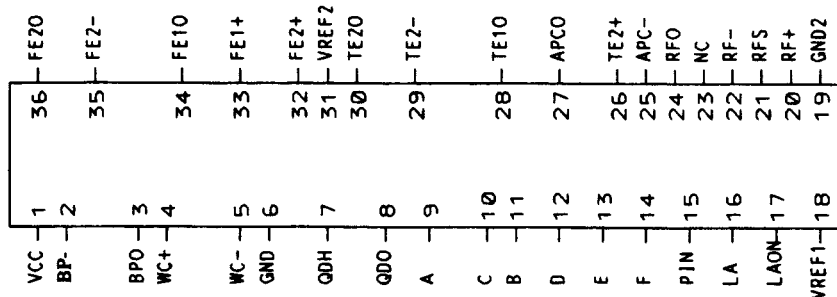
PA3026



●Pin Functions (UPC1347GS)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	VCC			
2	BP-	I		Vibration detect amplifier 1 inverter input
3	BPO	O		Vibration detect amplifier 1 output
4	WC+	I		Window comparator non-inverting input
5	WC-	I		Window comparator inverting input
6	GND			GND
7	QDH	I		Vibration detect amplifier 3 non-inverting input
8	QDO	O		Vibration detect amplifier 3 output
9	A	I		A signal input
10	C	I		C signal input
11	B	I		B signal input
12	D	I		D signal input
13	E	I		E signal input
14	F	I		F signal input
15	PIN	I		APC circuit PD amplifier input
16	LA	O		APC circuit LD amplifier output
17	LAON			Laser diode ON/OFF switching
18	VREF1			Reference voltage
19	GND2			GND
20	RF+	I		RF amplifier non-inverting input
21	RFS	O		RF summing virtual output
22	RF-	I		RF amplifier inverting input
23	NC			Not used
24	RFO	O		RF amplifier output
25	APC-	I		APC circuit PD amplifier inverting
26	TE2+	I		Tracking error amplifier 2 non-inverting input
27	APCO	O		APC circuit PD amplifier output
28	TE1O	O		Tracking error amplifier 1 output
29	TE2-	I		Tracking error amplifier 2 inverting input
30	TE2O	O		Tracking error amplifier 2 output
31	VREF2			Reference voltage
32	FE2+	I		Focus error amplifier 2 non-inverting input
33	FE1+	I		Focus error amplifier 1 non-inverting input
34	FE1O	O		Focus error amplifier 1 output
35	FE2-	I		Focus error amplifier 2 inverter input
36	FE2O	O		Focus error amplifier 2 output

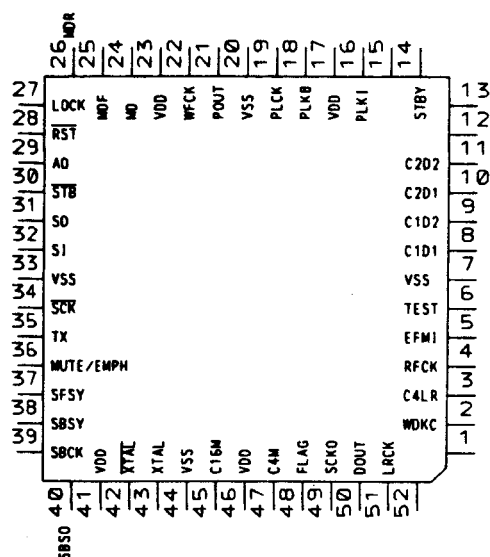
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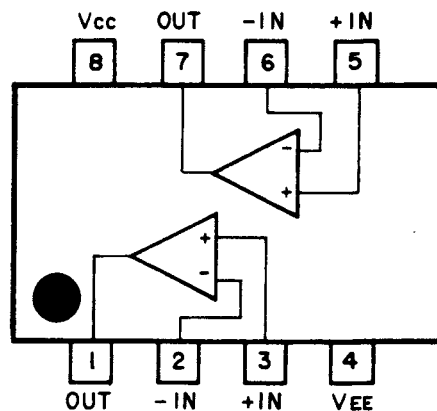
● Pin Functions (UPD6375GC)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC			Not used
2	WDCK	O		Output terminal for signal having double the frequency of LRCK
3	C4LR	O		Output terminal for signal having four the frequency of LRCK
4	RFCK	O		Oscillation clock divider signal,output pin for signal giving 1-frame sync.
5	EFMI	I		EFM signal input terminal
6	TEST			Test terminal
7	VSS			Gnd
8	C1D1	O		Output terminal indicating C1 error correction status
9	C1D2	O		Output terminal indicating C1 error correction status
10	C2D1	O		Output terminal indicating C2 error correction status
11	C2D2	O		Output terminal indicating C2 error correction status
12,13	NC			Not used
14	STBY	I		Standby input terminal
15	NC			Not used
16	PLK1	O		VCO output terminal for use in analog PLL selection
17	VDD			5V
18	PLK8	I		VCO output terminal for use in analog PLL selection
19	PLCK	O		Bit clock monitor terminal
20	VSS			Gnd
21	POUT	O		Output terminal for phase comparison between EFM signal and bit clock
22	WFCK	O		Signal issuring one-frame period by bit clock dividing signal
23	VDD			5V
24	MDS	O		Signal indicating spindle motor CLV servo control output status
25	MDF	O		Spindle motor CLV servo control positive direction output terminal
26	MDR	O		Spindle motor CLV servo control negative direction output terminal
27	LOCK	O		"H" when synchronization signal & frame counter output coincide at EFM demodulator
28	RST	I		Reset signal input terminal
29	A0	O		Control signal distinguishing data from microcomputer
30	STB	I		Signal latching serial data inside LSI
31	SO			Serial data input terminal
32	SI	I		Input terminal for data from microcomputer
33	VSS			Gnd
34	SCR	I		Clock input terminal serial data input
35	TX	O		Digital audio interface data output terminal
36	MUTE/EMPH	O		Output for mute command decoding signal or sub-Q.commpand pre-emphasis data
37	SFSY	O		Signal indicating subcode one-frame synchronization
38	SBSY	O		Signal indicating head of subcode block
39	SBCK	I		Subcode data read clock input terminal
40	SBSO	O		Subcode data output terminal
41	VDD			5V
42	XTAL	O		Oscillation continuation terminal
43	XTAL	I		Oscillation continuation terminal
44	VSS			Gnd
45	C16M	O		Oscillation clock output terminal
46	VDD			5V
47	C4M	O		1/4 cycle output terminal for oscillation clock signals
48	FLAG	O		Flag sig. indicating that the current audio data output of incorrectable data
49	SCKO	O		Clock output terminal for audio serial data
50	DOUT	O		Serial audio data output terminal
51	LRCK	O		Signal distinguishing between left and right channel DOUT terminal output
52	NC			Not used

*UPD6375GC

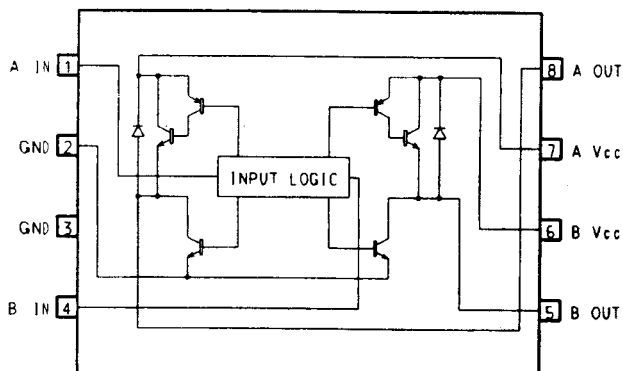


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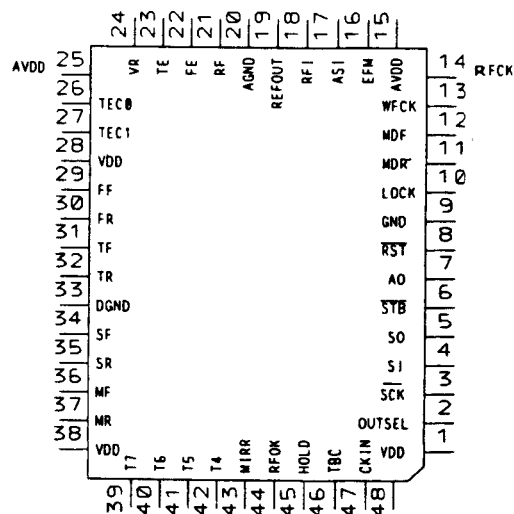


IC's marked by * are MOS type.
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liable to be damaged by electrostatic induction.

MB3854PF



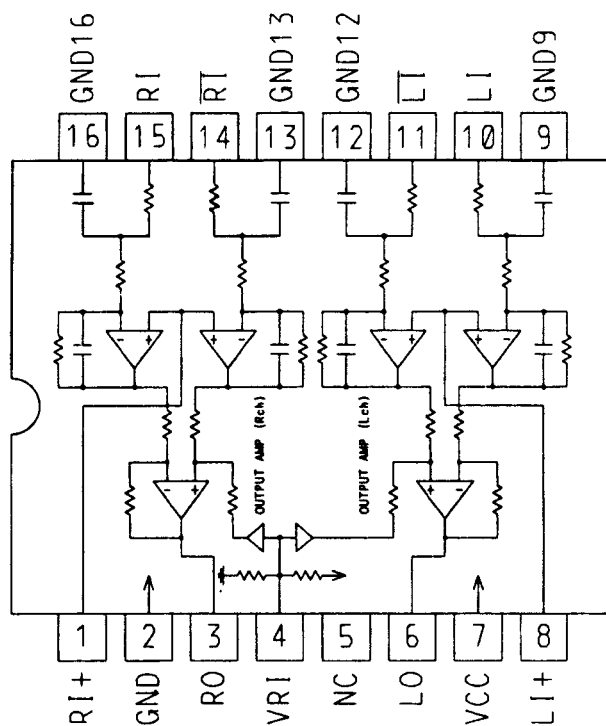
UPD6374AGH



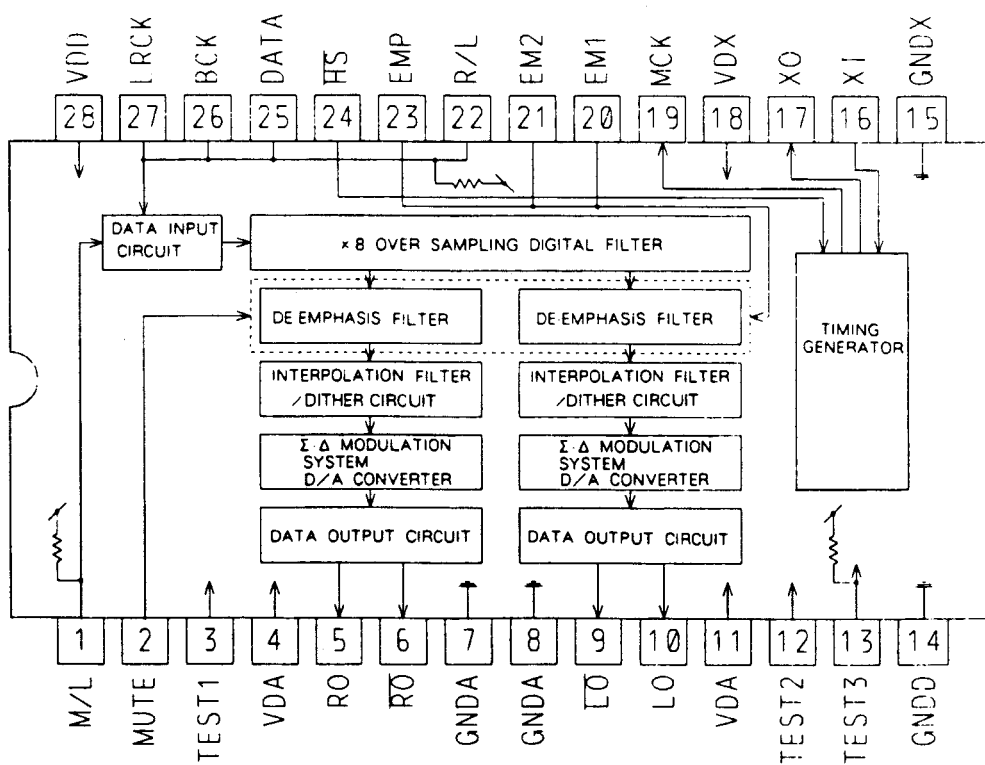
● Pin Functions(UPD6374AGH)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	VDD			Power supply
2	OUTSEL	I		Sets PWM output mode for the motor system
3	SCK	I		Clock input terminal for serial data input and output
4	SI	I		Serial data input
5	SO	O		Serial data and status signal output
6	STB	I		Signal latching serial data inside LSI
7	A0	I		Used in combination with stb A0 = "L" : Set in address register when STB is active A0 = "H" : Parameter setting when STB is active
8	RST	I		System reset
9	DGND			Logic circuit GND terminal
10	LOCK	I		Input terminal for detection of spindle servo error signal
11	MDR	I		Input terminal for detection of spindle servo error signal
12	MDF	I		Input terminal for detection of spindle servo error signal
13	WFCK	I		Input terminal for detection of spindle servo error signal
14	RFCK	I		Input terminal for detection of spindle servo error signal
15	AVDD			Positive power supply terminal for analog circuit
16	EFM	O		EFM signal output terminal
17	ASI	I		Level comparing input for RF signal comparison
18	RFI	I		Analog input terminal for EFM comparator
19	REFO	O		A/D converter midpint output terminal inside LSI
20	AGND			Analog circuit GND
21	RF	O		RF signal input terminal
22	FE	I		Focus error terminal
23	TE	I		Tracking error input terminal
24	VR	I		Input signal is quantified as follows:FS=88.2kHz,Resolution:6 bits The output takes place directly at microcomputer interface, that is, not via the filter block within LSI
25	AVDD			Positive power supply terminal for analog circuit
26	TECO	I		Tracking comparator input terminal
27	TECI	I		Tracking comparator input terminal
28	DVDD			Positive power supply terminal for logic circuit
29	FF	O		PWM positive output terminal for the focus loop filter
30	FR	O		PWM negative output terminal for the focus loop filter
31	TF	O		PWM positive output terminal for the tracking loop filter
32	TR	O		PWM negative output terminal for the tracking loop filter
33	DGND			Logic circuit GND terminal
34	SF	O		PWM positive output terminal for the thread loop filter
35	SR	O		PWM negative output terminal for the thread loop filter
36	MF	O		PWM positive output terminal for the spindle loop filter
37	MR	O		PWM negative output terminal for the spindle loop filter
38	DVDD			Positive power supply terminal for logic circuit
39	T7	I		Sets tracking PWM output mode
40	T6	I		Sets focus PWM output mode
41	T5	I		Selects motor modulation mode
42	T4	I		Selects between focus and tracking modulation mode
43	MIRR	O		MIRR detection signal output terminal
44	RFOK	O		RFOK detection signal terminal
45	HOLD	I		Hold control signal input terminal
46	TBC			Tracking bank switching terminal
47	CKIN	I		System clock input terminal
48	TEST	I		Test terminal

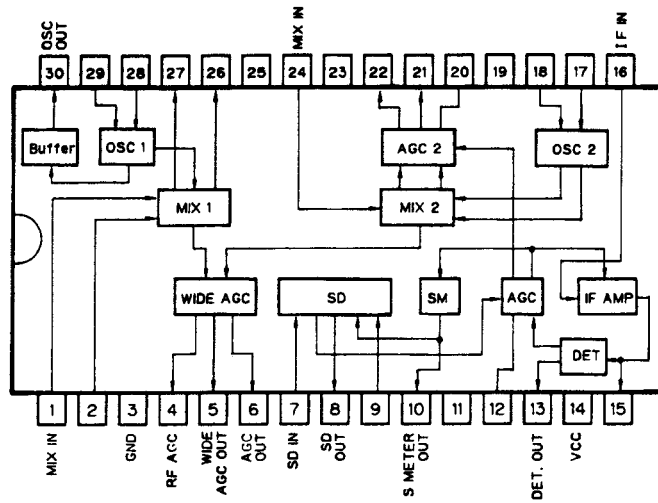
TA2009F



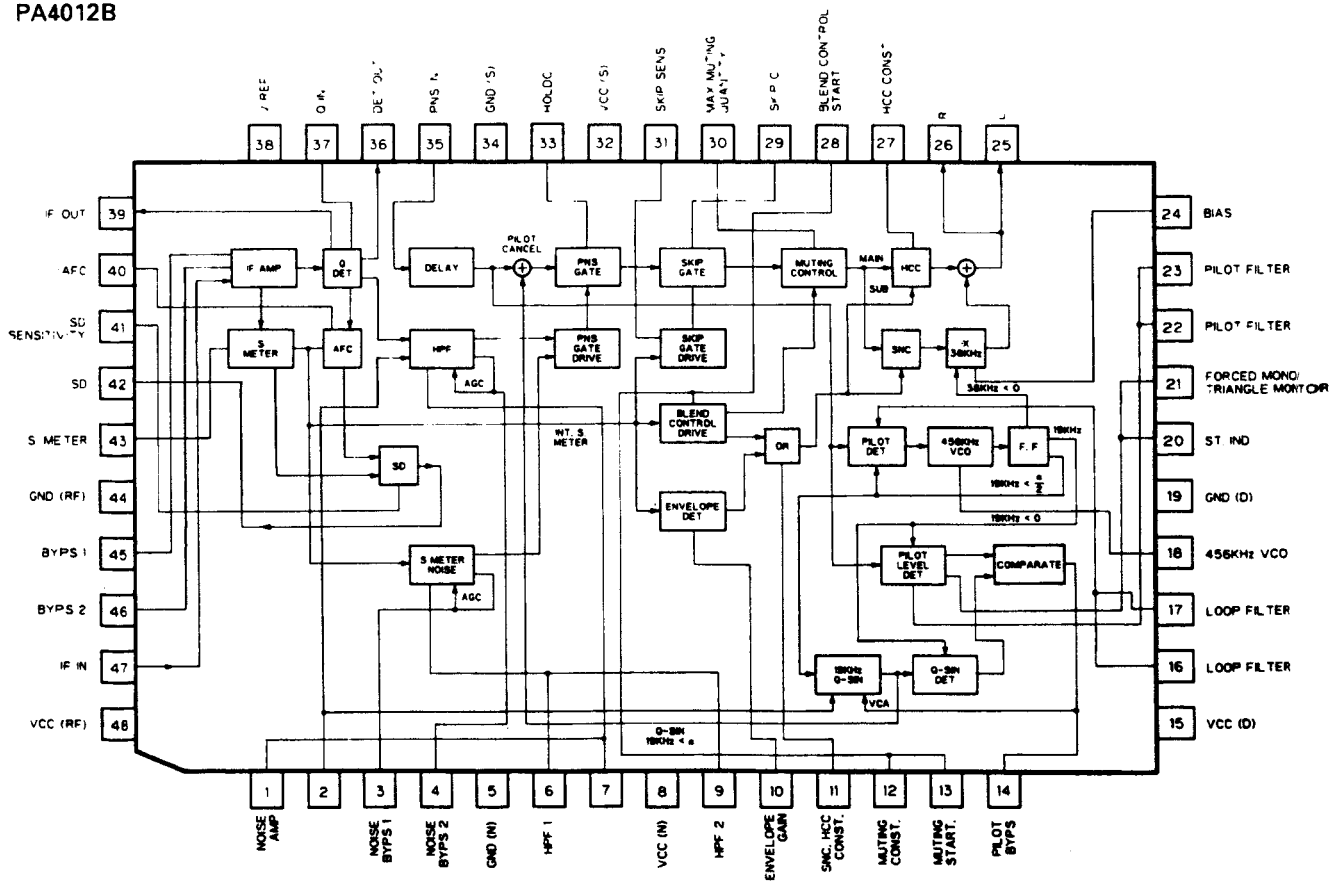
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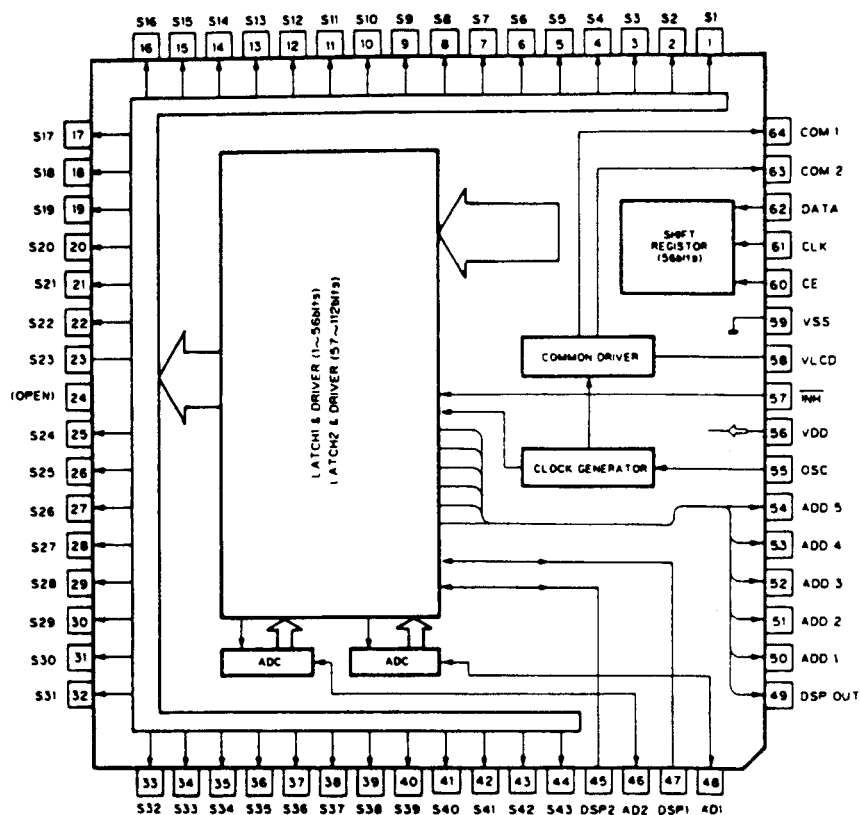
PA4017



PA4012B



LC7582E



●FM Front End (CWB1035)

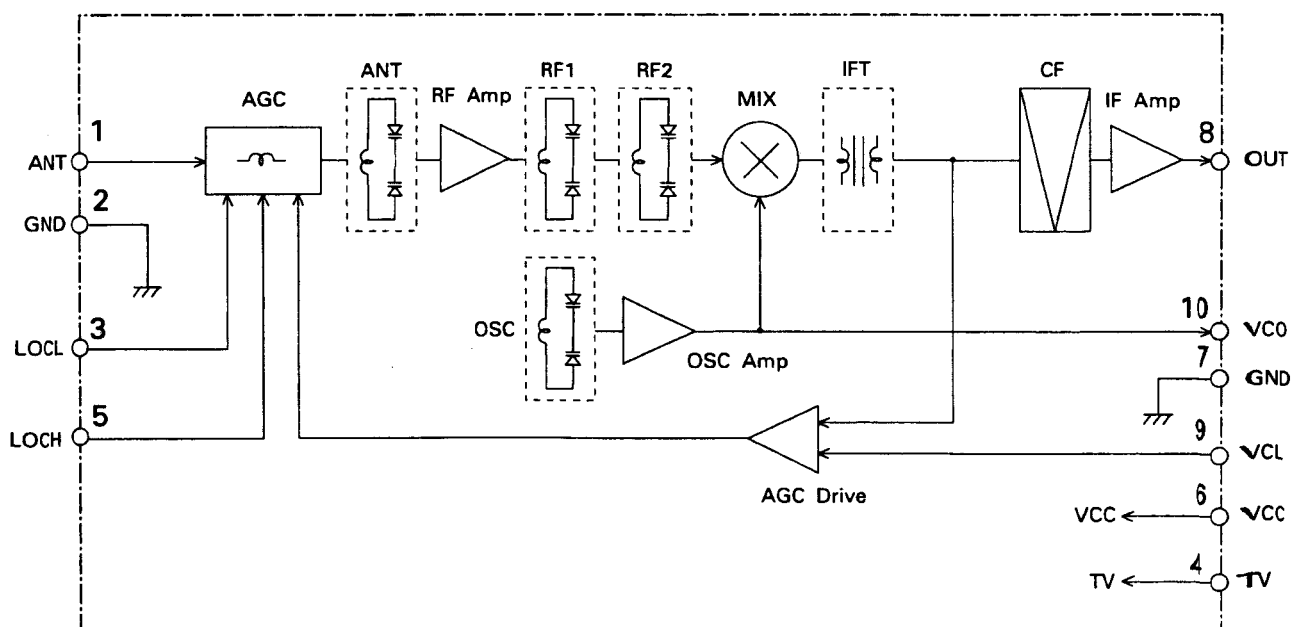


Fig. 45

●LCD (CAW1194)

SEGMENT

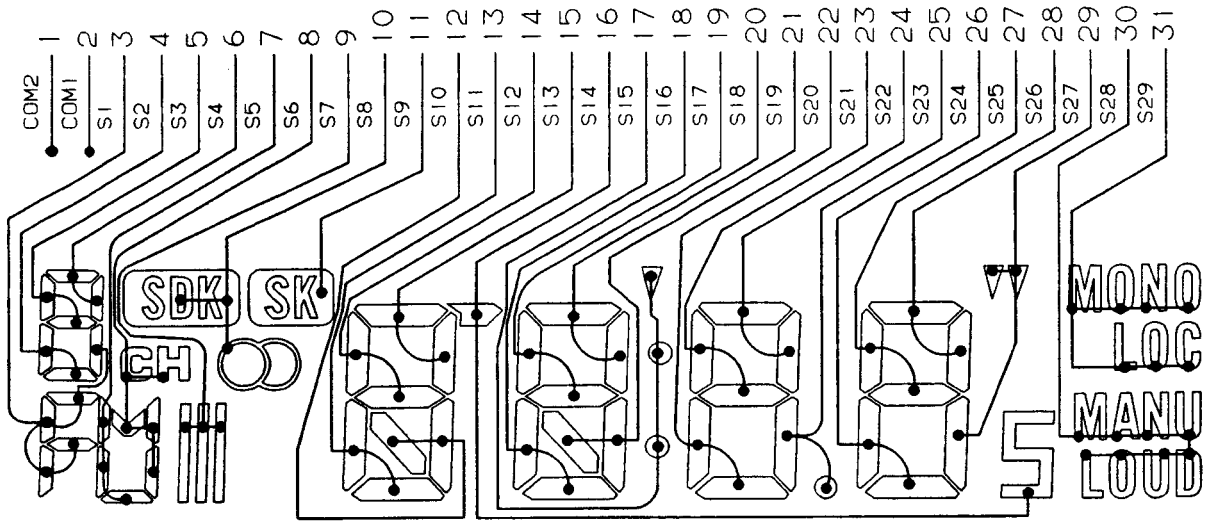


Fig. 46

COMMON

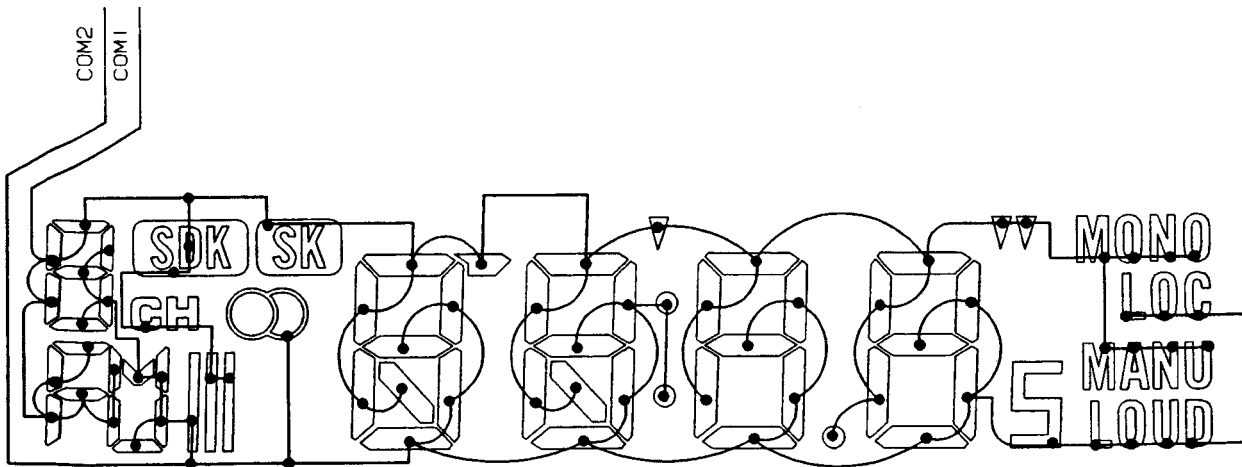
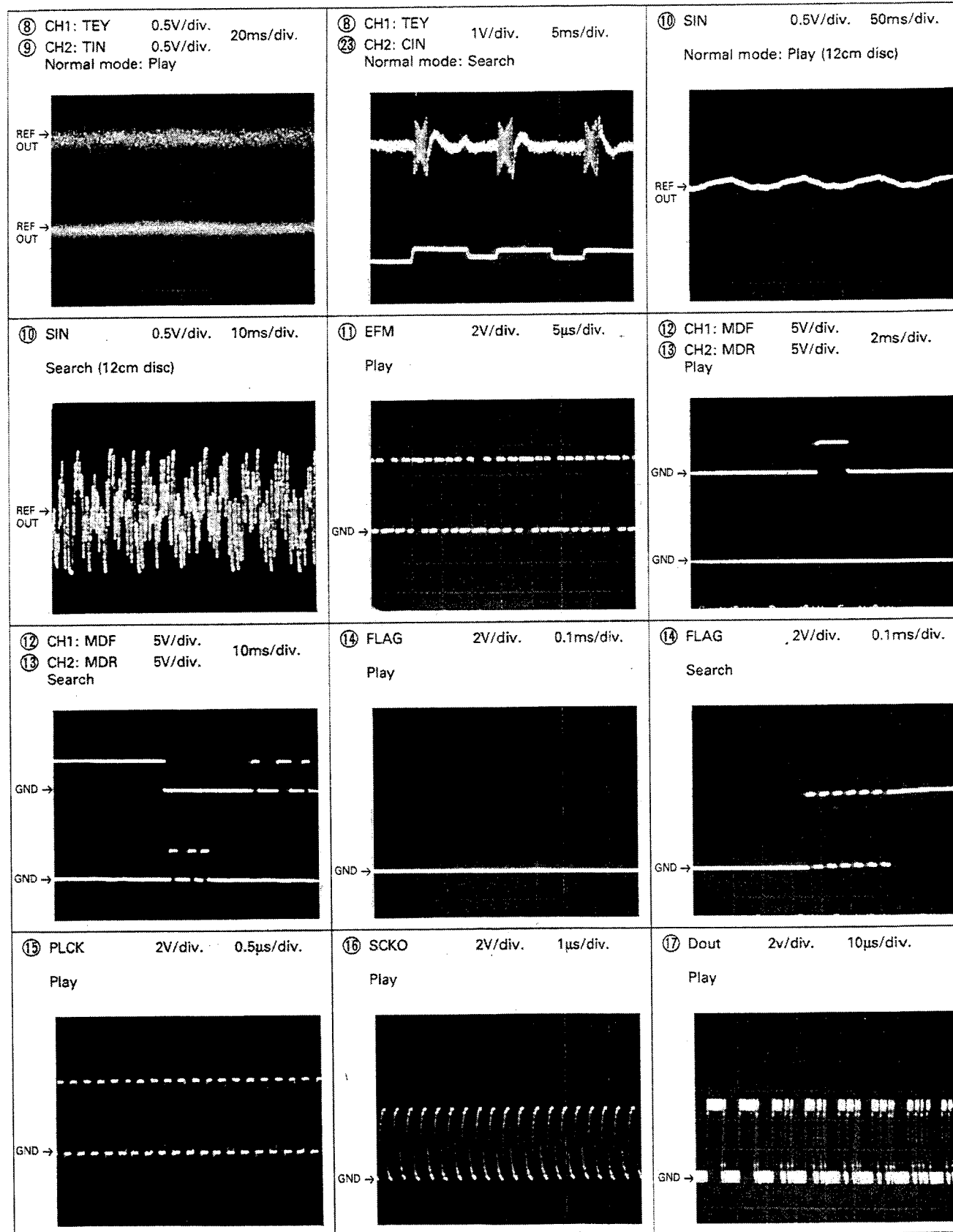
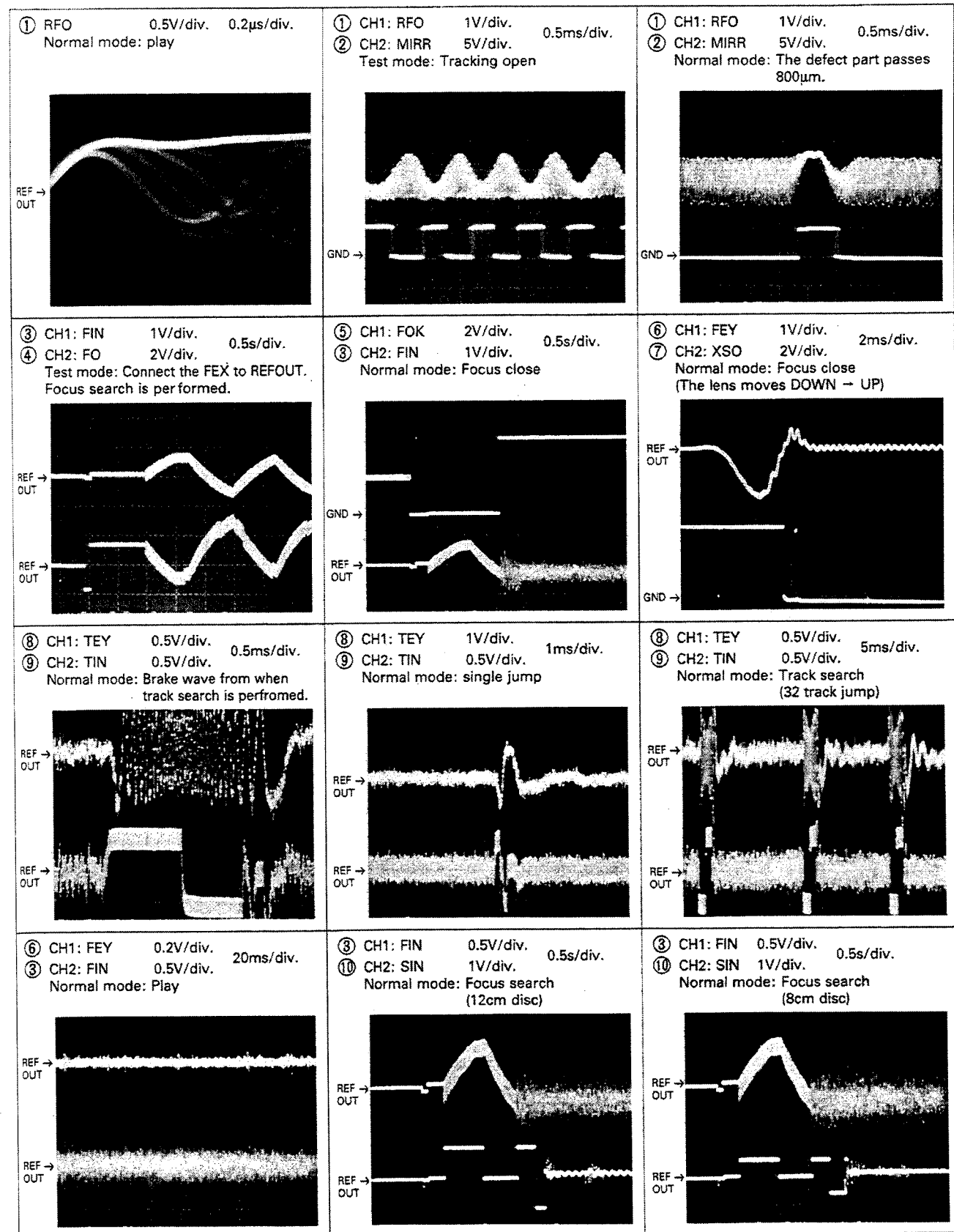


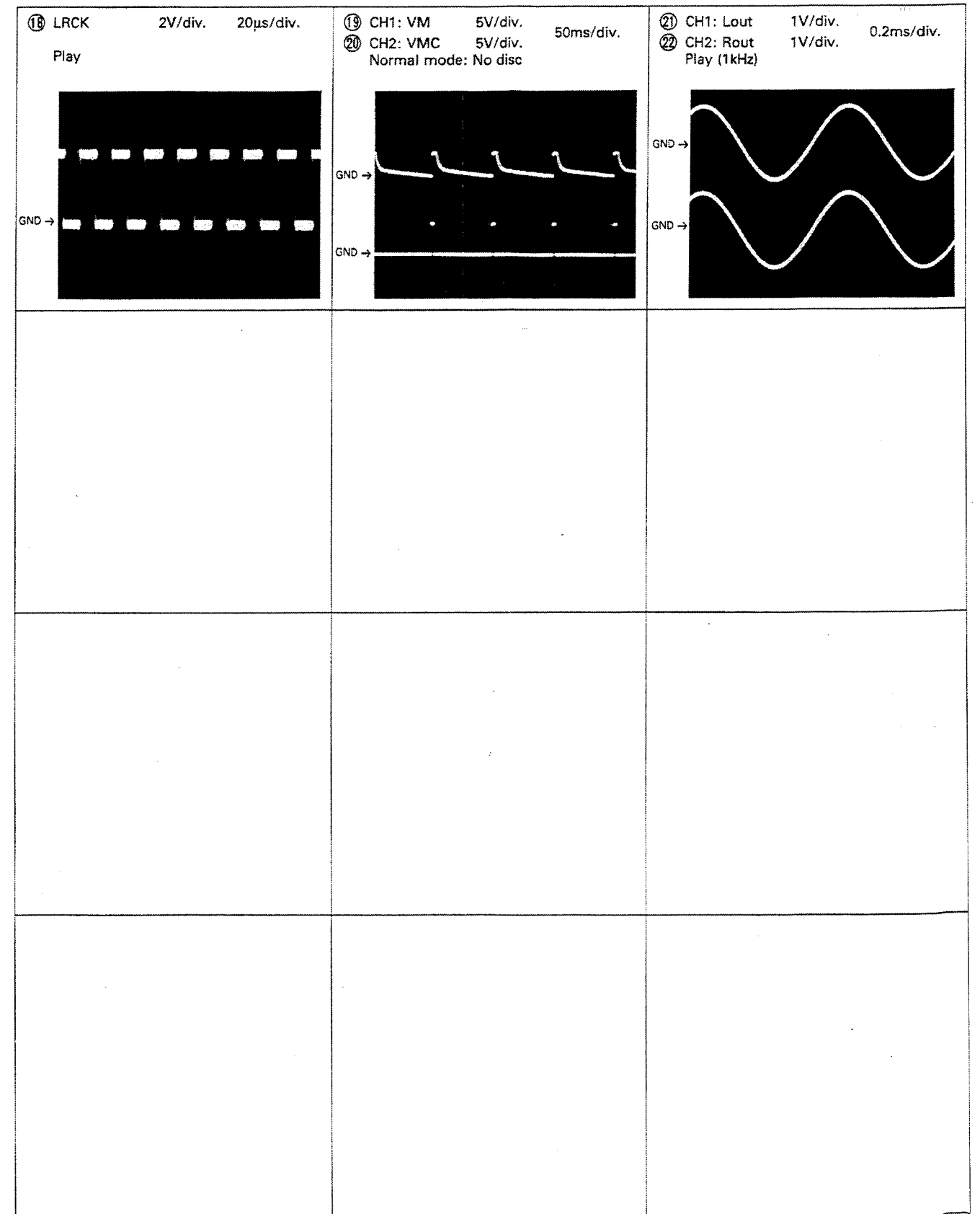
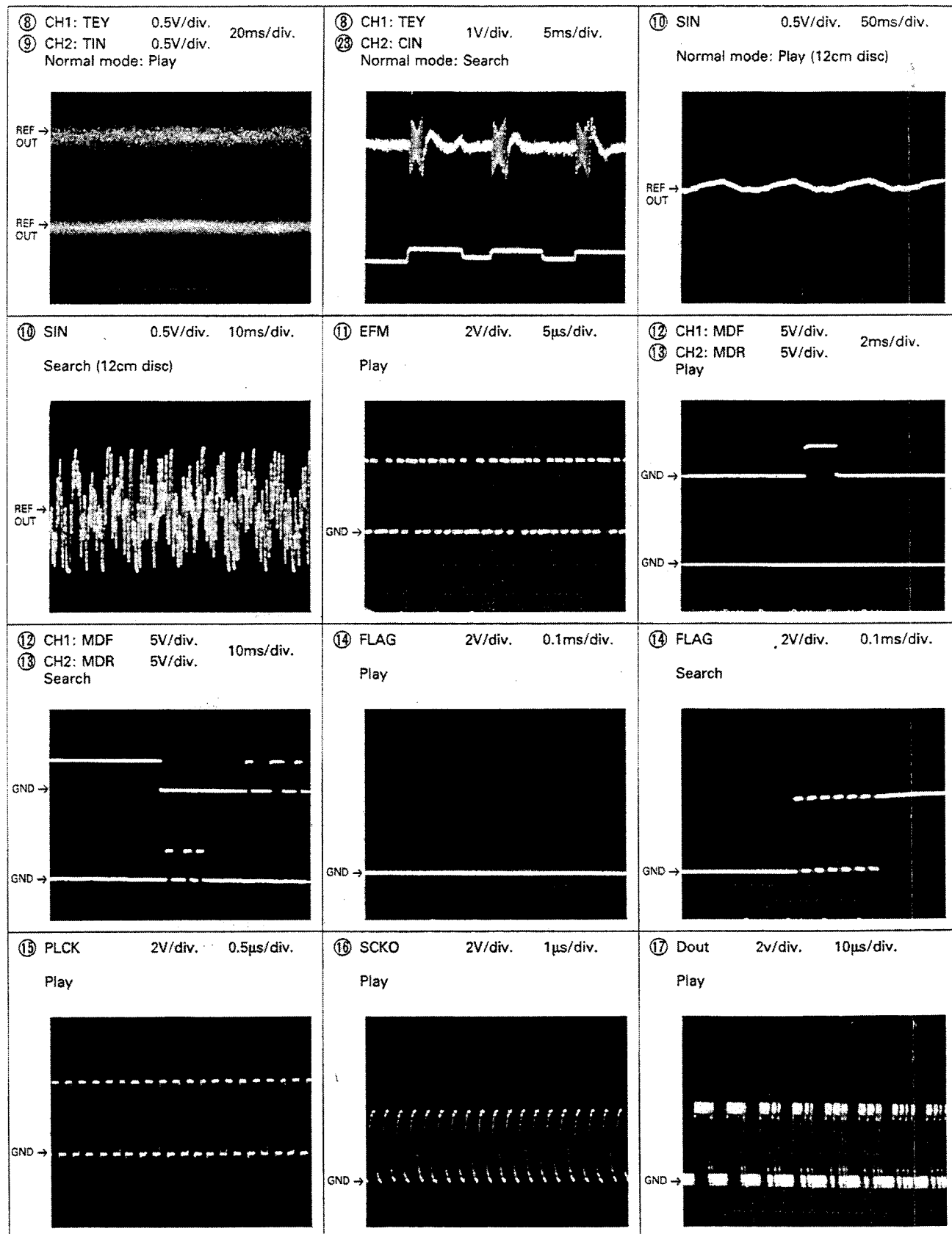
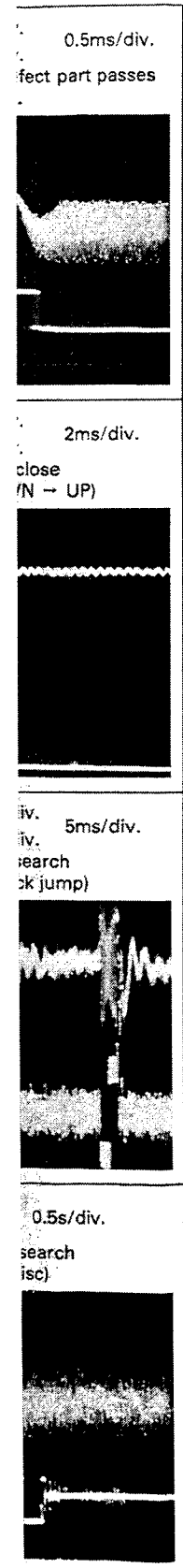
Fig. 47

Wave Forms

Note: 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage
REFOUT: 2.5V

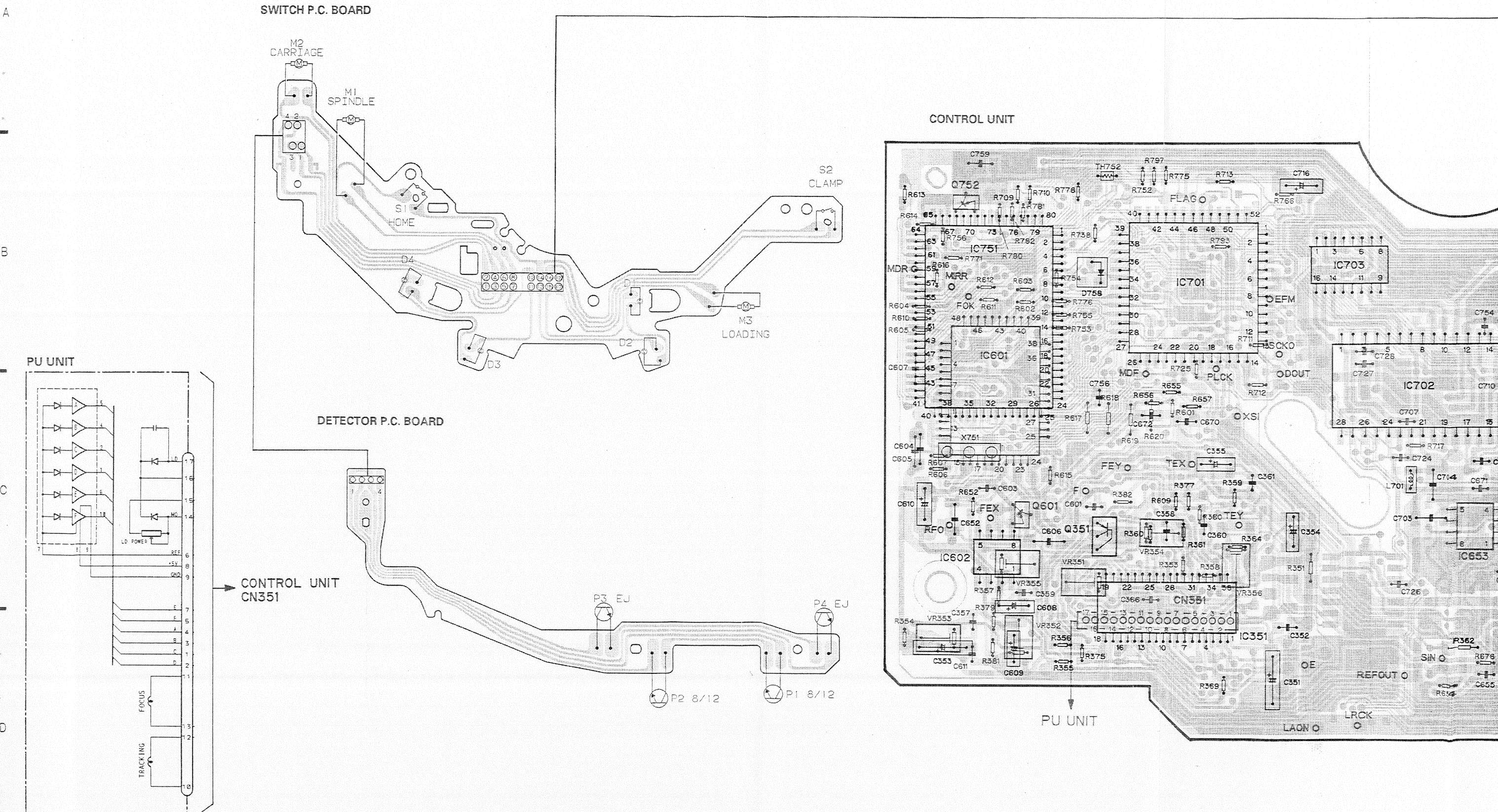


ircuit diagram.



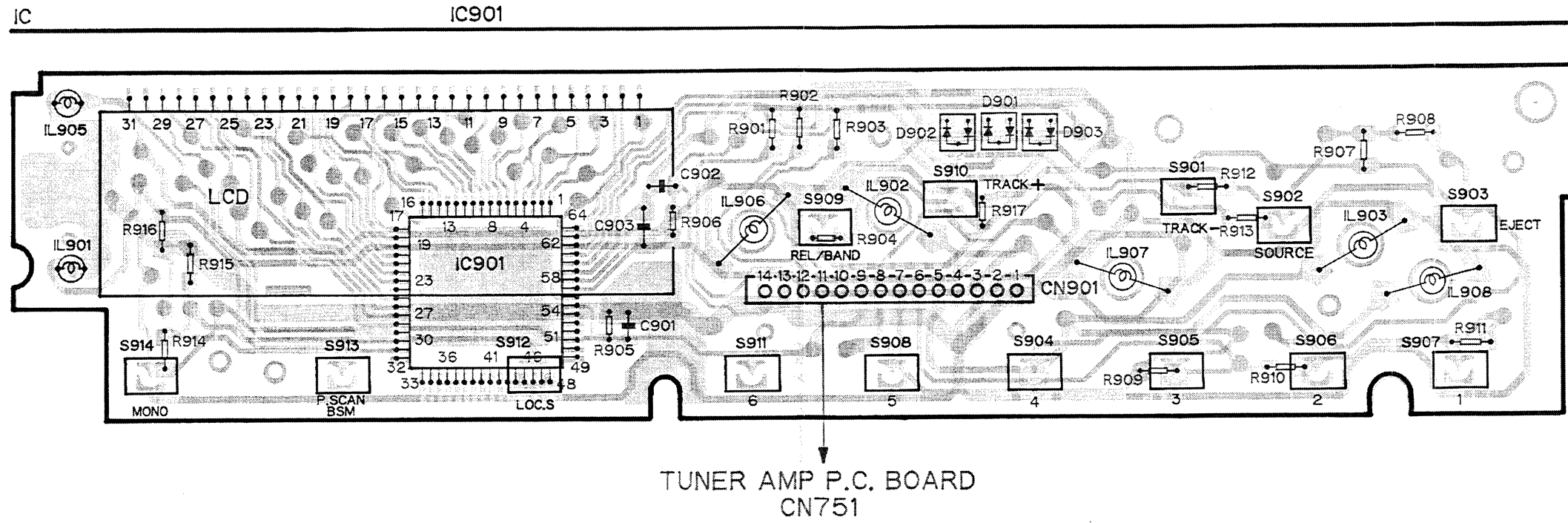
6.1 CD MECHANISM MODULE

● Connection Diagram

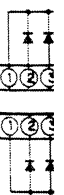
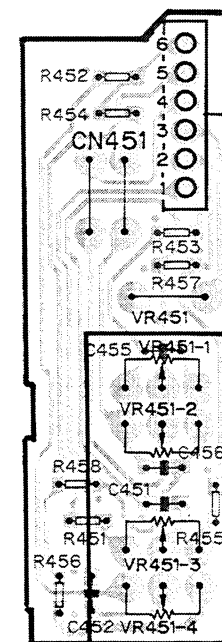


●Connection Diagram

KEY BOARD UNIT



TONE CONTROL P.C. BOARD



FM/AM TUNER UNIT

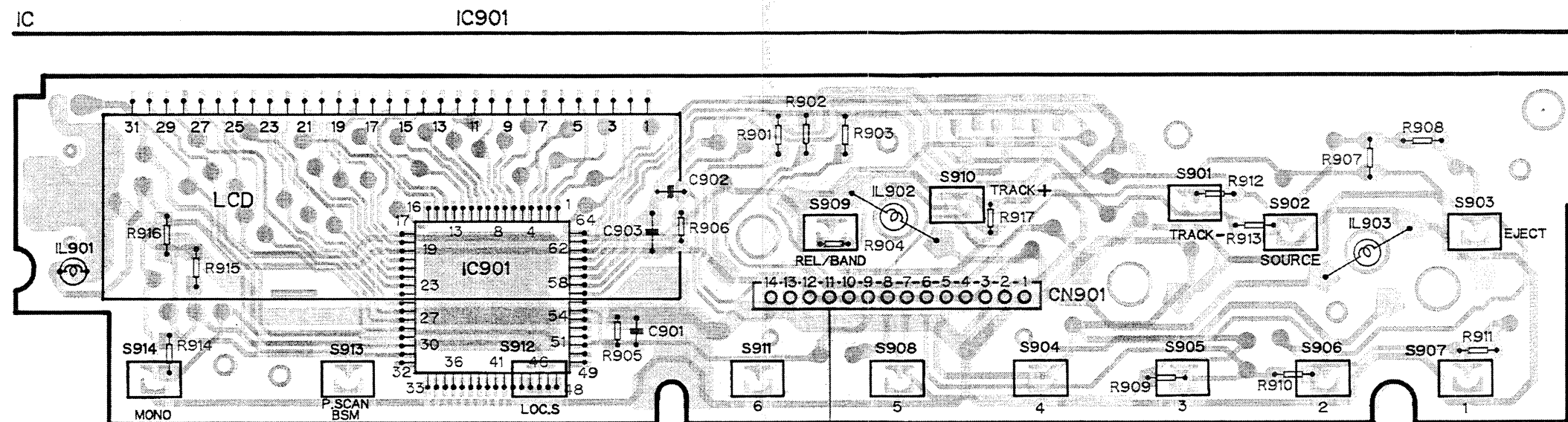


58

6.3 TUNER AMP UNIT AND KEY BOARD UNIT (DEH-520/UC, DEH-440/ES)

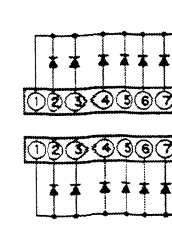
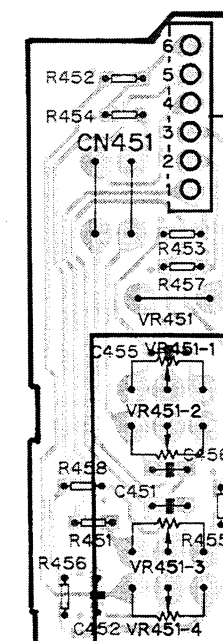
●Connection Diagram

KEY BOARD UNIT



TUNER AMP P.C. BOARD
CN751

TONE CONTROL P.C. BOARD



TUNER AMP P.C. BOARD

Q508 Q509 Q504 Q851 Q503 IC501 IC751 Q970 Q968 Q966 Q967 Q974 Q952 Q951 Q962 Q959 Q958
 IC, Q Q502 Q507 IC851 IC501 IC752 Q971 Q969 Q601 Q965 Q553 Q956 Q860 Q863 Q957 Q961 Q960
 Q852 IC854 Q602 Q505 Q971 Q969 Q601 Q953 Q864 IC853 IC852 IC451 Q855 Q856 Q857 Q858 IC551

FM/AM TUNER UNIT

- 10 RR+
- 8 R-
- 9 FR+
- 7 RL+
- 5 L-
- 6 FL+
- 4 7A BACK UP
- 3 GND
- 2 1K (1/2W) ACC
- 1 0.5A B REMOTE

- 4 R-CH
- 3 PRE OUT
- 2 L-CH

CONTROL UNIT
CN752

KEY BOARD UNIT
CN901

Fig. 52

6.6 FM/AM TUNER UNIT (DEH-640/ES, DEH-440/ES)

●Circuit Diagram

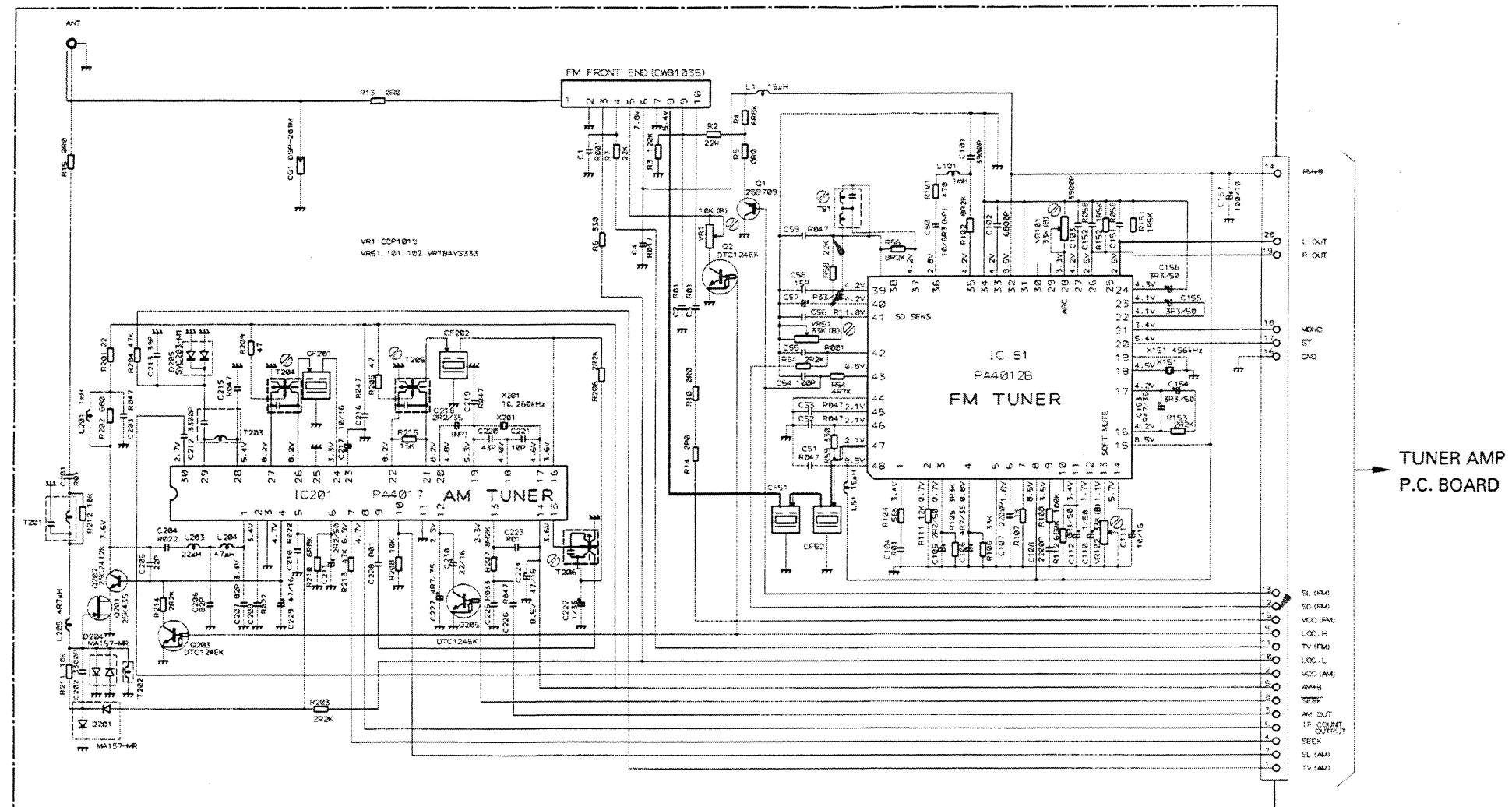


Fig. 58

NOTE:
 □ Symbol indicates a resistor.
 No differentiation is made between chip resistors and discrete resistors.
 —□— Symbol indicates a capacitor.
 No differentiation is made between chip capacitors and discrete capacitors.
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2—2R2
 0.022—R022

●Connection Diagram

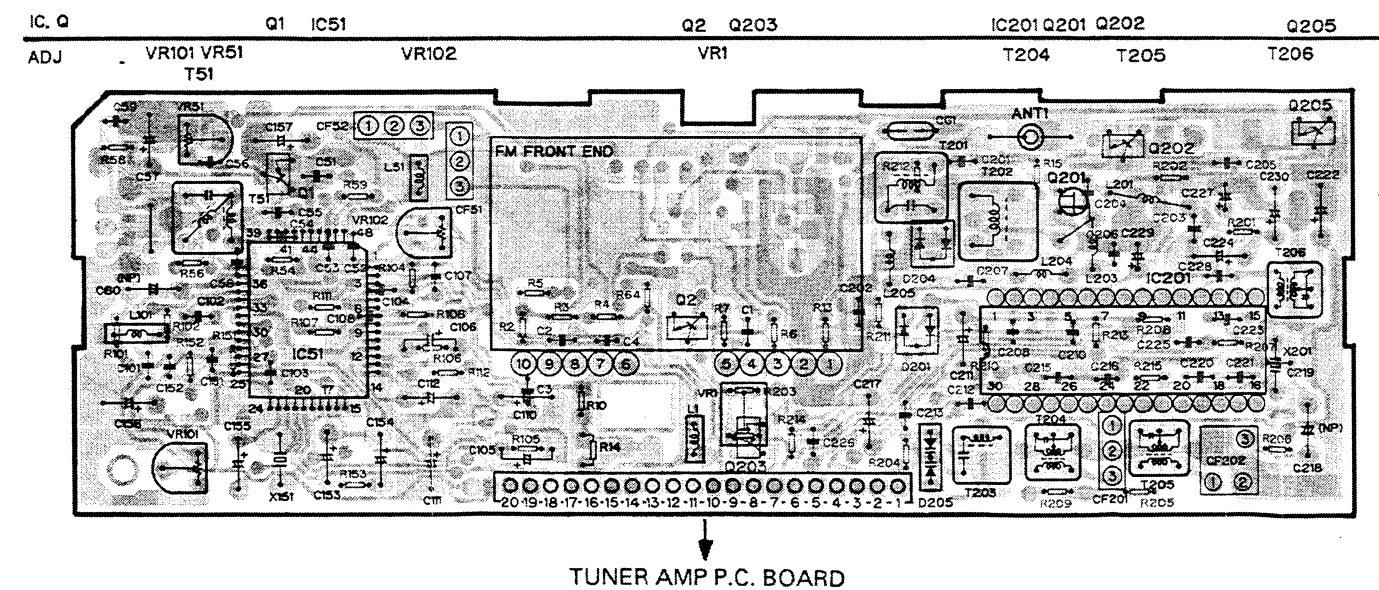


Fig. 59

7. CHASSIS EXPLODED VIEW

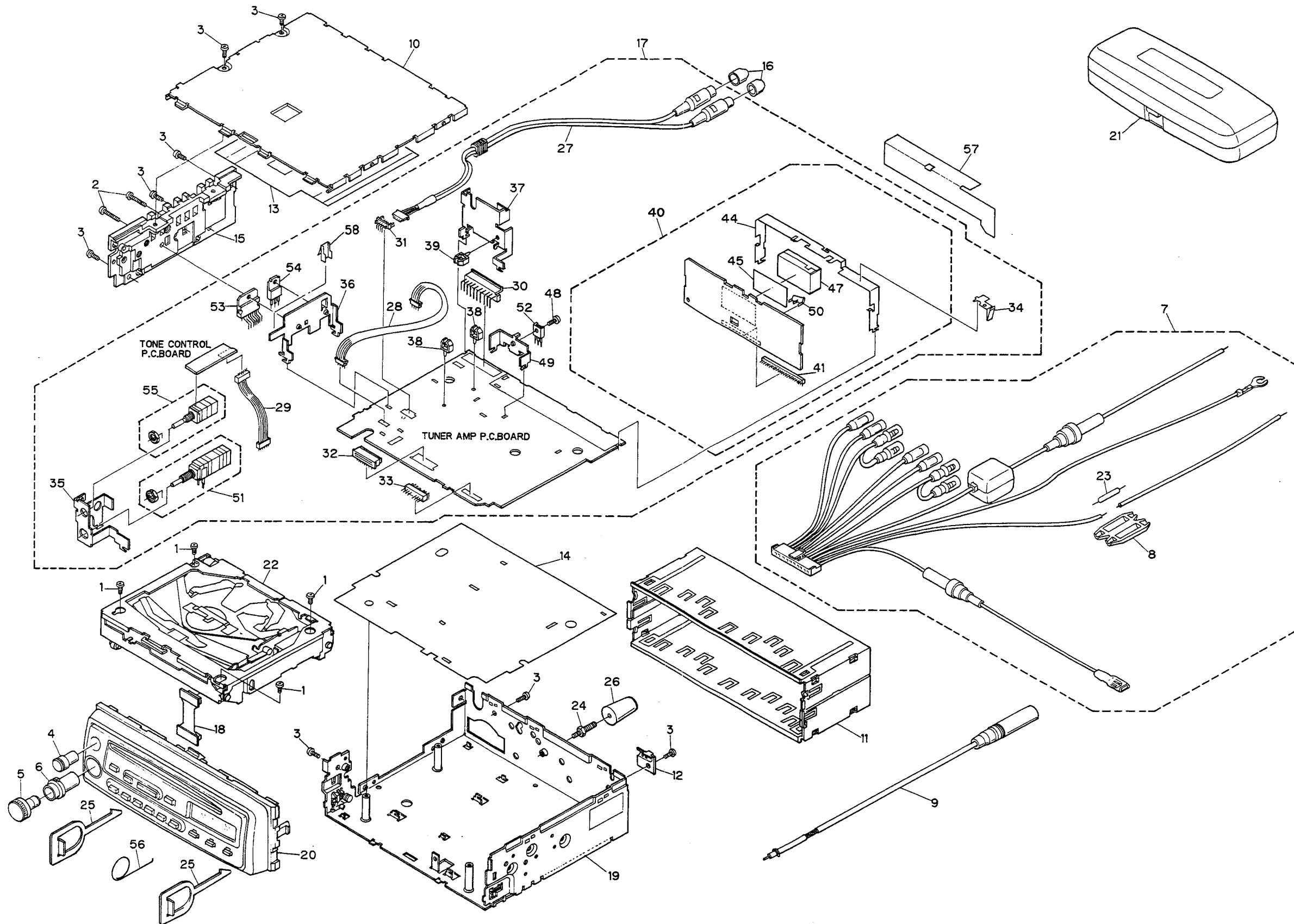


Fig. 60

NOTES:

- Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by " ◎ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

● Parts List(DEH-44/US)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BMZ26P040FMC	* 31	Plug(CN851)	CKS1238
2	Screw	BMZ26P140FMC	32	Connector(CN751)	CKS1534
3	Screw	BMZ30P050FMC	* 33	Connector(CN752)	CKS2265
4	Knob	CAA1305	* 34	Earth Plate	CNC3382
5	Knob	CAA1307	* 35	Holder	CNC4470
6	Knob	CAA1308	* 36	Holder	CNC4471
7	Cord	CDE3821	* 37	Holder	CNC4472
8	Cap	CNS1472	38	Clamper	CNV1335
9	Antenna Cable	CDH1129	39	Clamper	CNV3409
* 10	Case	CNB1662	◎ 40	FM/AM Tuner Unit	CWE1225
11	Holder	CNC1484	* 41	Plug	CKS1628
* 12	Holder	CNC3940	* 42	.....
* 13	Insulator	CNM3193	* 43	.....
* 14	Insulator	CNM3502	* 44	Holder	CNC2880
* 15	Heat Sink	CNR1266	45	Insulator	CNM2105
16	Cap	CNV2680	* 46	.....
◎ 17	Tuner Amp Unit	CWX1533	47	FM Front End	CWB1035
18	Connector Unit	CXA5058	48	Screw	BMZ26P060FMC
* 19	Chassis Unit	CXA5121	* 49	Holder	CNC4703
* 20	Grille Assy	CXA5174	50	Antenna Jack	CKX1010
21	Case Assy	CXA5331	51	Volume(VR851)	CCS1219
◎ 22	CD Mechanism Module	CXK2541	52	Transistor(Q965)	2SD1684
23	Resistor	RS1/2P102JL	53	IC(IC551)	PAL001A
24	Screw	CBA1002	54	Transistor(Q960)	2SD1944
25	Handle	CNC4846	55	Volume(VR451)	CCS1199
26	Bush	CNV1917	56	Spring	CBH-865
27	Cord	CDE4027	* 57	Insulator	CNM3341
28	Connector	CDE3824	58	Insulator	CNM3705
29	Connector	CDE3825			
30	Plug	CKS-467			

- The DEH-730/UC, DEH-720/US, DEH-640/ES, DEH-520/UC and DEH-440/ES Parts Lists enumerate the parts which differ from those enumerated in the DEH-44/US Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-44/US Parts List is given on page 73.

Mark No.	Description	DEH-44/US Part No.	DEH-730/UC Part No.	DEH-720/US Part No.	DEH-640/ES Part No.	DEH-520/UC Part No.	DEH-440/ES Part No.
◎ 17	Tuner Amp Unit	CWX1533	CWX1532	CWX1557	CWX1531	CWX1534	CWX1535
* 20	Grille Assy	CXA5174	CXA5175	CXA5435	CXA5176	CXA5179	CXA5181
21	Case Assy	CXA5331	CXA5331	.....	.....	.....	.....
27	Cord	CDE4027	CDE3819	CDE3819	CDE3819	CDE3819	CDE3819
32	Connector	CKS1534	CKS1534	CKS1534	CKS1534	CKS1532	CKS1532
◎ 40	FM/AM Tuner Unit	CWE1225	CWE1257	CWE1257	CWE1226	CWE1257	CWE1226

8. GRILLE ASSY EXPLODED VIEW

8.1 DEH-44/US, DEH-730/UC, DEH-720/US

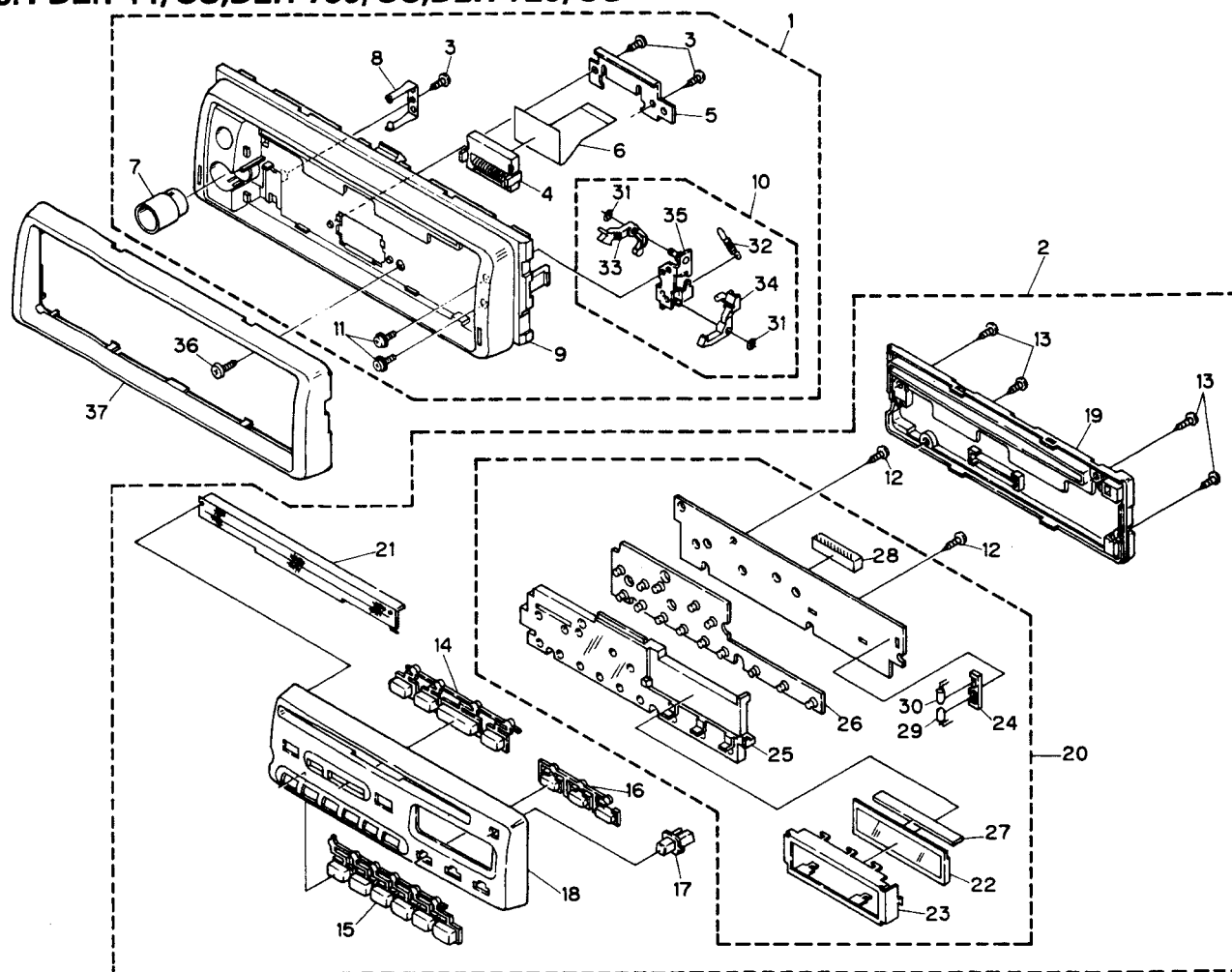


Fig. 51

● Parts List(DEH-44/US)

Mark No.		Description	Part No.	Mark No.	Description	Part No.	
	1	Panel Assy	CXA5183	21	Cover Unit	CXA5119	
	2	Detach Grille Assy	CXA5189	22	LCD	CAW1194	
	3	Screw	CBA1202	*	23	Holder	CNC4466
	4	Socket	CKS2293		24	Holder	CNV2752
*	5	Holder	CNC4701		25	Lens	CNV3285
	6	P.C.Board	CNP3158	26	Rubber	CNV3290	
	7	Lens	CNV3287	27	Connector	CNV3291	
	8	Holder Unit	CXA5125	28	Plug(CN901)	CKS2402	
	9	Panel Unit	CXA5118	29	Lamp(IL901)	CEL1025	
	10	Detach Mechanism Unit	CXA5188	30	Lamp(IL905)	CEL-147	
	11	Screw	PMS20P030FZK	31	Washer	CBF1039	
	12	Screw	BPZ20P080FMC	32	Spring	CBH1484	
	13	Screw	BPZ20P080FZK	33	Arm	CNV3292	
	14	Button	CAC3370	34	Arm	CNV3293	
	15	Button	CAC3371	35	Holder Unit	CXA5124	
	16	Button	CAC3372	36	Screw	PMS20P060FZK	
	17	Button	CAC3373	37	Panel	CNS2528	
	18	Grille	CNS2556				
	19	Cover	CNS2565				
◎	20	Key Board Unit	CWX1538				

- The DEH-730/UC,DEH-720/US,DEH-640/ES,DEH-520/UC and DEH-440/ES Parts Lists enumerate the parts which differ from those enumerated in the DEH-44/US Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-44/US Parts List is given on page 74.

Mark No.	Description	DEH-44/US Part No.	DEH-730/UC Part No.	DEH-720/US Part No.	DEH-640/ES Part No.
2	Detach Grille Assy	CXA5189	CXA5190	CXA5436	CXA5191
18	Grille	CNS2556	CNS2557	CNS2648	CNS2558
20	Key Board Unit	CWX1538	CWX1538	CWX1558	CWX1538
30	Lamp(IL905)	CEL-147	CEL-147	.....	CEL-147

8.2 DEH-520/US,DEH-440/ES

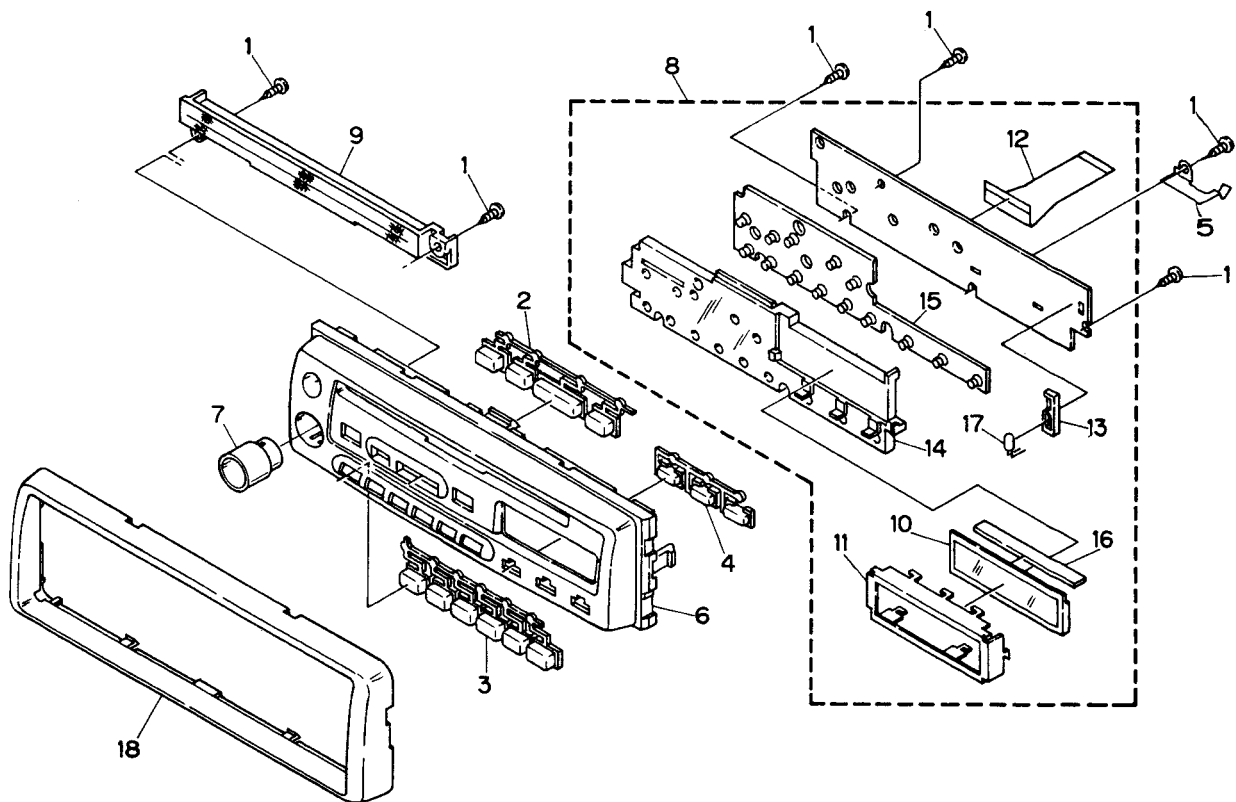


Fig. 62

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BPZ20P080FMC	10	LCD	CAW1194
2	Button	CAC3370	* 11	Holder	CNC4466
3	Button	CAC3371	12	P.C.Board	CNP3159
4	Button	CAC3372	13	Holder	CNV2752
5	Earth Plate	CNC4797	14	Lens	CNV3285
6	Grille(DEH-520/UC)	CNS2561	15	Rubber	CNV3290
	Grille(DEH-440/ES)	CNS2563	16	Connector	CNV3291
7	Lens	CNV3287	17	Lamp(IL901)	CEL1025
8	Key Board Unit	CWX1539	18	Panel	CNS2528
9	Cover Unit	CXA5120			

9. CD MECHANISM MODULE EXPLODED VIEW

NOTES:

- Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by " © " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

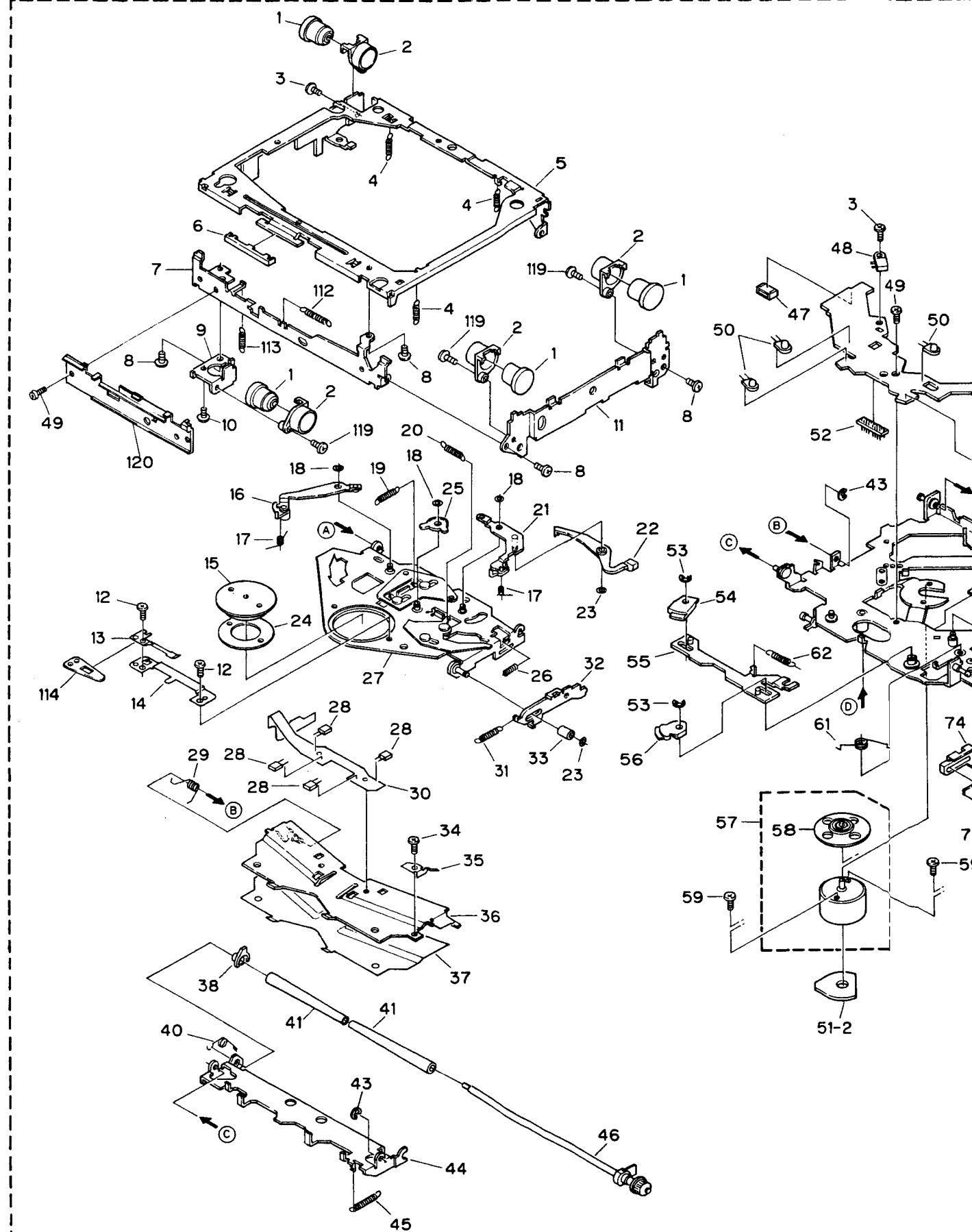
● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Damper	CNV2882	46	Gear Unit	CXA5385
2	Holder	CNV2863	47	Connector(4P)	CKS2088
3	Screw	CBA1004	48	Switch(S1,2)	CSN1012
4	Spring	CBH1417	49	Screw	CBA1077
5	Frame	CNC3816	50	LED(D1-4)	BR4361F
6	Guide	CNV2891	51	Composite P.C.Board	CNX1956
7	Frame	CNC4783	52	Connector(16P)	CKS2064
8	Screw	BMZ20P030FMC	53	Washer	YE20FUC
9	Bracket	CNC4687	54	Arm	CNV2884
10	Screw	BMZ20P040FNI	55	Lever Unit	CXA5093
11	Frame	CNC4686	56	Arm	CNV2885
12	Screw	JFZ20P018FNI	57	Motor(Spindle)	CXM1058
13	Spring	CBL1131	58	Support Wheel	CNV2859
14	Bracket	CNC3830	59	Screw	HBA-258
15	Clamper	CNV2864	60	.....
16	Arm Unit	CXA5090	61	Spring	CBH1414
17	Spring	CBH1415	62	Spring	CBH1424
18	Washer	CBF1039	63	.....
19	Spring	CBH1418	64	Spring	CBH1410
20	Spring	CBH1419	65	Spring	CBL1129
21	Arm Unit	CXA5091	66	Screw	JFZ20P025FMC
22	Arm	CNV2876	67	Belt	CNT1047
23	Washer	CBF1038	68	Bracket	CNC3832
24	Sheet	CNM3582	69	Holder	CNV2878
25	Gear	CNV2875	70	Spring	CBH1413
26	Spring	CBH1423	71	Cover	CNV2889
27	Arm Unit	CXA5383	72	Holder	CNV3023
28	Photo-transistor	PT4800	73	Chassis Unit	CXA4258
29	Spring	CBH1449	74	Lever	CNV2874
30	P.C.Board	CNP3330	75	Lever	CNC3824
31	Spring	CBH1420	76	Gear	CNV2871
32	Lever	CNC3828	77	Arm	CNC3833
33	Roller	CLA1936	78	Gear	CNV2872
34	Screw	JFZ20P018FNI	79	Gear	CNV2883
35	Spring	CBL1130	80	Gear	CNV2873
36	Arm Unit	CXA4263	81	Gear	CNV2870
37	Sheet	CNM3111	82	Gear	CNV2869
38	Holder	CNV3276	83	Bracket Unit	CXA4261
39	.....		84	Shaft	CLA2027
40	Spring	CBH1509	85	Motor Unit(Carriage)	CXA4649
41	Roller	CNV3412	86	Holder	CNV2888
42	Short Pin	CBL1010	87	Screw Unit	CXA5384
43	Washer	YE15FUC	88	Screw	CBA1082
44	Arm	CNC3819	89	Washer	CBF1054
45	Spring	CBH1510	90	Gear	CNV2892

Mark	No.	Description	Part No.
	91	Gear	CNV2868
	92	Bracket Unit	CXA5078
	93	.....
	94	Screw	PMS26P040FMC
	95	Rack	CNV3268
	96	Spring	CBH1580
	97	Bracket	CNC4436
	98	Screw	JFZ17P035FNI
	99	Holder Unit	CXA5246
	100	PU Unit	CGY1020
	101	.....
	102	Spring	CBH1422
	103	Holder	CNC4306
	104	Screw	JGZ20P070FNI
	105	.....

Mark	No.	Description	Part No.
⊙	106	Motor Unit(Loading)	CXA4267
*	107	Connector(CN352)	CKS2063
	108	Connector(CN752)	CKS2149
*	109	Connector(CN351)	CKS2121
	110	Control Unit	CWX1577
	111	Weight	CNC4551
	112	Spring	CBH1458
	113	Spring	CBH1457
	114	Spacer	CNM3315
⊙	115	CD Mechanism Unit	CXA4260
	116-118	.....
	119	Screw	CBA1230
	120	Guide	CNV3462
	121	Screw	PMS20P025FMC

●CD Mechanism Module



●CD Mechanism Module

No.
1267
063
149
121
1577

1551
1458
1457
3315
1260

1230
3462
20P025FMC

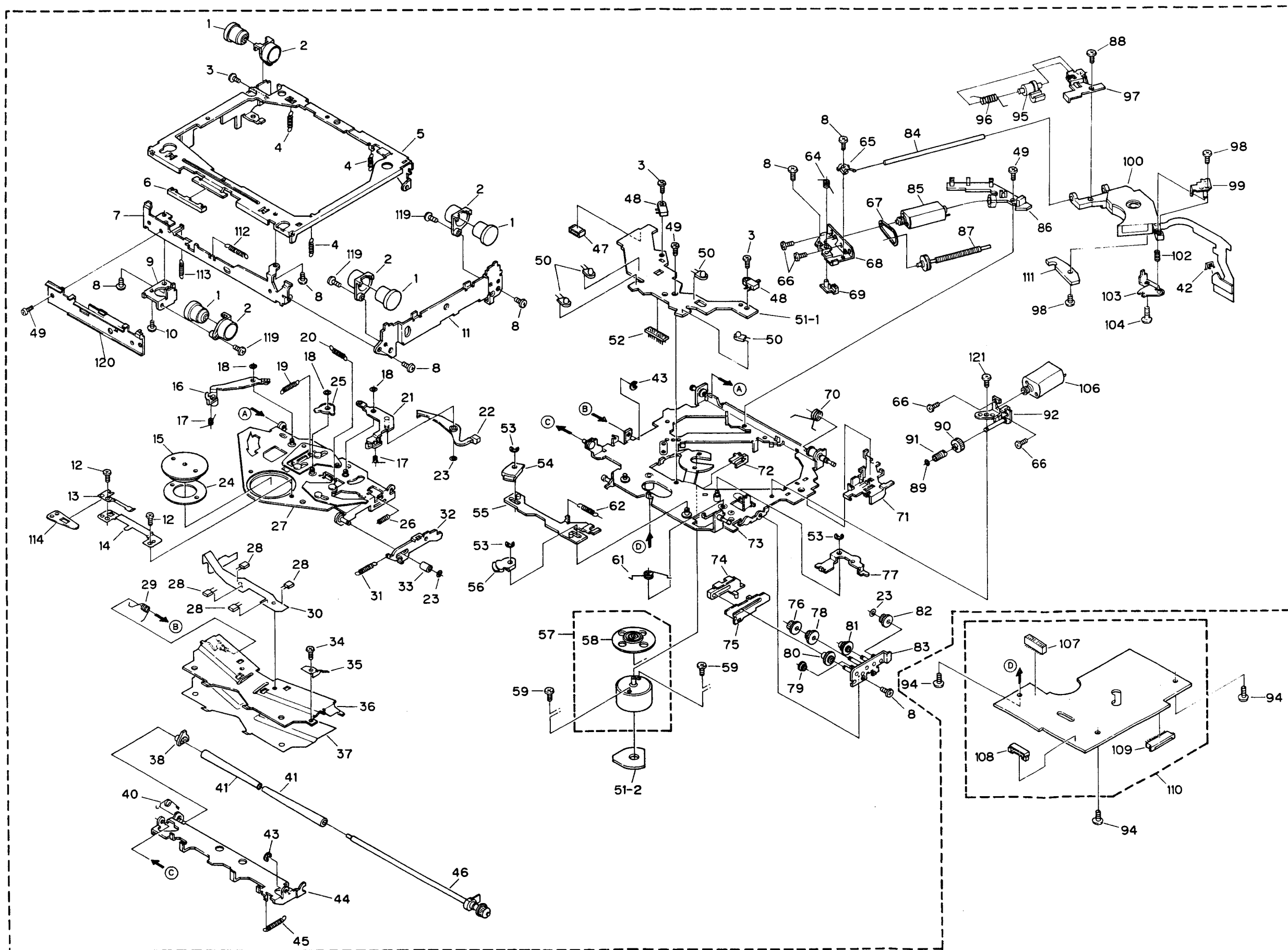


Fig. 13

10. PACKING METHOD

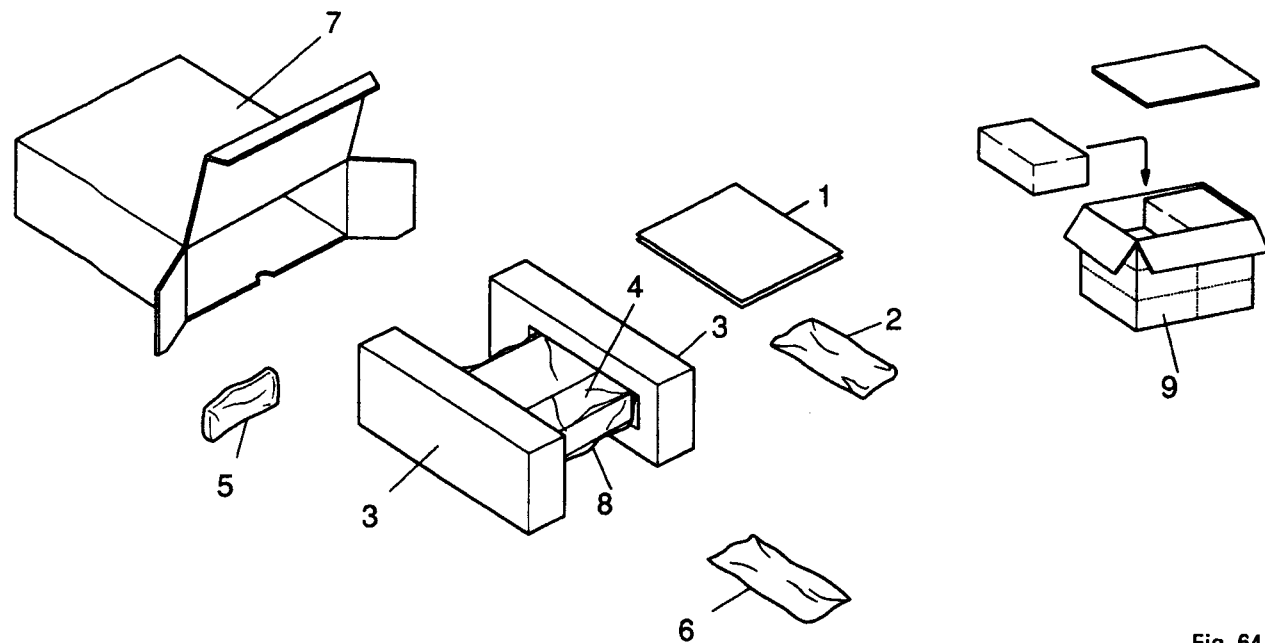


Fig. 64

● Parts List

Mark	No.	Description	DEH-44/US Part No.	DEH-730/UC Part No.	DEH-720/US Part No.	DEH-640/ES Part No.	DEH-520/UC Part No.	DEH-44/ES Part No.
	1-1	Owner's Manual	CRB1260	CRD1625	CRB1262	CRD1626	CRD1625	CRD1626
*	1-2	Warranty Card	CRY1053	*****	*****	*****	*****	*****
*	1-3	Card	*****	ARY1048	ARY1048	*****	ARY1048	*****
	2	Cord	CDE3821	CDE3821	CDE3821	CDE3821	CDE3821	CDE3821
	3	Protector	CHP1527	CHP1527	CHP2528	CHP2528	CHP2528	CHP2528
	4	Holder	CNC1484	CNC1484	CNC1484	CNC1484	CNC1484	CNC1484
	5	Case Assy	CXA5331	CXA5331	*****	*****	*****	*****
	6	Accessory Assy	CEA1774	CEA1774	CEA1774	CEA1774	CEA1774	CEA1774
	7	Carton	CHG2280	CHG2281	CHG2283	CHG2282	CHG2284	CHG2285
	8	Cover	CEG1092	CEG1092	CEG1092	CEG1092	CEG1092	CEG1092
	9	Contain Box	CHL2280	CHL2281	CHL2283	*****	CHL2284	*****

*:Non spare part

Mark	No.	Description	Part No.
	6-1	Spring	CBH-865
	6-2	Screw Assy	CEA1761
	6-2-1	Screw(X4)	BMZ50P080FMC
	6-2-2	Screw(X1)	CBA-102
	6-2-3	Screw(X1)	CBA1002
	6-2-4	Screw(X4)	CMZ50P080FMC
	6-2-5	Nut(X2)	NF50FMC
*	6-2-6	Polyethylene Bag	CEG-127
	6-3	Handle(X2)	CNC4846
	6-4	Strap	CNF-111
	6-5	Bush	CNV1917
*	6-6	Polyethylene Bag	CEG-158

Part No.	Model	Language
CRB1260	DEH-44/US	English
CRB1262	DEH-720/US	English
CRD1625	DEH-730/UC	English, French, Spanish
CRD1626	DEH-640/ES	English, French, Spanish, Arabic
	DEH-440/ES	

11. ELECTRICAL PARTS LIST

NOTE:

● Parts whose parts numbers are omitted are subject to being not supplied.

● The part numbers shown below indicate chip components.

Chip Resistor

RS1/□□□□□J, RS1/□□□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

----- Circuit Symbol & No. Part Name -----Part No.

Unit Number :
Unit Name : FM/AM Tuner Unit (DEH-44/US)

MISCELLANEOUS

IC 51
IC 201
Q 1
Q 2
Q 3

PA4012B
PA4017
2SB709
DTC124EK
2SA1162

Q 201
Q 202
Q 203 205
D 11
D 201 204

2SK435
2SC2412K
DTC124EK
1SV128A-BB
MA157-MR

D 205
L 1 51
L 11 12
L 101
L 201

Inductor
Inductor
Inductor
Inductor

SVC203-M1
CTF1241
CTF1065
CTF1126
CTF1026

L 203
L 204
L 205
T 51
T 201

Ferri-Inductor
Ferri-Inductor
Ferri-Inductor
Coil
Coil

LAU220K
LAU470K
LAU4R7K
CTC1065
CTB1020

T 202
T 203
T 204
T 205
T 206

Coil
Coil
Coil
Coil
Coil

CTB1004
CTB1040
CTE1037
CTE1038
CTE1039

CG 1
CF 51 52
CF 201
CF 202
X 151

Ceramic Filter
Ceramic Filter
Filter
Ceramic Resonator

DSP-201M
CTF-182
CTF1041
CTF1085
CSS1055

X 201
VR 1
VR 51 101 102

Crystal Resonator
Semi-fixed 100kΩ (B)
Semi-fixed 33kΩ (B)
FM Front End

CSS1014
CCP1025
VRTB4VS333
CWB1035

RESISTORS

R 2 7
R 3
R 4
R 5
R 6 59

RS1/10S223J
RS1/10S683J
RS1/10S682J
RS1/10S0R0J
RS1/10S331J

R 8
R 9
R 11
R 12
R 10 14

RS1/10S331J
RS1/10S223J
RS1/10S104J
RS1/10S470J
RS1/10S0R0J

R 15
R 54
R 56
R 58
R 64

RS1/10S0R0J
RS1/10S472J
RS1/10S123J
RS1/10S223J
RS1/10S222J

----- Circuit Symbol & No. Part Name -----Part No.

R 101
R 102
R 104
R 105
R 106

RS1/10S471J
RS1/10S822J
RS1/10S563J
RS1/10S332J
RS1/10S333J

R 107
R 108
R 111
R 112
R 151 152

RS1/10S102J
RS1/10S104J
RS1/10S123J
RS1/10S684J
RS1/10S152J

R 153
R 201
R 202
R 203 206 214
R 204 213

RS1/10S222J
RS1/10S220J
RS1/10S681J
RS1/10S222J
RS1/10S473J

R 205 209
R 207
R 208 211 212
R 210
R 215

RS1/10S470J
RS1/10S822J
RS1/10S103J
RS1/10S682J
RS1/10S153J

CAPACITORS

C 1
C 2 3 104
C 4 59
C 11 12 13 14
C 15

CKSQYB102K50
CKSQYB103K50
CKSQYF473Z25
CCSQCH220J50
CKSQYB223K25

C 51
C 52 53
C 54
C 55
C 56

CKSQYF473Z25
CKSQYF473Z25
CCSQL101J50
CKSQYB102K50
CKSQYF104Z25

C 57
C 58
C 60
C 101
C 102

CEAR68M50LL
CCSQCH180J50
CEALNP100M6R3
CKSQYB392K50
CKSQYB682K50

C 103
C 105
C 106
C 107 108
C 110

CKSQYB392K50
CEA2R2M50LL
CEA4R7M35LL
CKSQYB222K50
CEA010M50LL

C 111
C 112
C 151 152
C 153
C 154 155 156

CEA100M16LL
CEA0R1M50LL
CKSQYB563K25
CSZAR47M35L
CEA3R3M50LL

C 157
C 201 223 228
C 202 212
C 203 215 216 219 226
C 204 208 210

CEA101M10LL
CKSQYB103K25
CKSQYB332K50
CKSQYF473Z25
CKSQYB223K25

----- Circuit Symbol

C 205
C 206 207
C 211
C 213
C 217

C 218
C 220
C 221
C 222
C 224

C 225
C 227
C 229
C 230

Tuner Amp Unit
Consists of
Tuner Amp P.C.Board
Tone Control P.C.Board

Unit Number :
Unit Name : Tune

MISCELLANEOUS

IC 451 851 852 853
IC 501
IC 551
IC 751
IC 752

IC 854
Q 502 503 507 508
Q 504 553 752 753
Q 505
Q 506

Q 508
Q 601 602 860 961
Q 751 753 755 962
Q 851 852
Q 853 856

Q 857 858
Q 863
Q 953
Q 955 966
Q 957 959

Q 961
Q 963
Q 967 969 971
D 501
D 502

D 503
D 551 851 852 853
D 953 968
D 955 964
D 957 967

D 959
D 961 964
D 963
D 965
D 967

D 968
D 969 965
D 971
L 501 502
L 601

IB 753
IB 755
X 501
X 601
VR 451

----- Circuit Symbol & No. Part Name -----Part No.
CAPACITORS

C 451 452 CKSQYB332K50
C 453 454 509 876 877 CCSQCH330J50
C 455 456 CKSQYB333K50
C 501 CKSQYB223K50
C 502 508 511 531 872 CKSQYB103K50

C 503 504 505 506 507 605 606 CKSQYB104K16
C 510 CEALNP4R7M16
C 513 515 518 529 602 751 954 970 CKSQYB473K16
C 514 CKSQYB103K25
C 516 601 CCSQCH102J50

C 517 CCSQCH561J50
C 519 CCSQSL101J50
C 520 865 866 CCSQCH101J50
C 521 CKSQYB102K50
C 522 523 CCSQCH270J50

C 555 CEAS2R2M50LL
C 556 951 CEAS010M50
C 557 CEAS470M16
C 558 CEAS100M16
C 559 560 CEAS010M50LL

C 561 562 752 851 852 853 854 855 856 CEA100M16LL
C 563 564 CCSQCH471J50
C 604 CCSQCH120J50
C 609 CCSQCH150J50
C 610 CEA101M6R3LL

C 857 858 CEA220M10LL
C 859 860 CCSQCH270J50
C 861 862 CEALNP4R7M16
C 863 864 CEAS220M10
C 867 868 CEA100M16LL

C 869 870 873 CCSQCH221J50
C 952 3300 μ F/16V CCH1150
C 953 CKSQYB104K25
C 955 967 CEAS101M16
C 956 1000 μ F/16V CCH1149

C 957 958 CEAS101M10
C 960 CEA220M16LL
C 961 CEA101M10LL
C 962 963 CEA470M16LL
C 964 CEA101M6R3LL

C 965 CKSQYB472K50
C 966 CEA101M16LL
C 968 CEAS221M10
C 969 1000 μ F/16V CCH1149

Unit Number :
Unit Name : Key Board Unit(DEH-44/US)

MISCELLANEOUS

IC 901 LC7582E
D 901 902 903 MA153-MC
IL 901 Lamp 14V 40mA CEL1025
IL 902 903 Lamp 14V 40mA CEL1296
IL 905 Lamp 14V 40mA CEL-147

IL 906 907 908 Lamp 14V 40mA CEL1297
LCD CAW1194

RESISTORS

R 901 902 903 RS1/8S103J
R 904 RS1/10S333J
R 905 906 RS1/10S104J
R 907 912 RS1/8S183J
R 908 913 RS1/8S473J

R 909 914 RS1/8S153J
R 910 915 RS1/8S273J
R 911 916 RS1/8S683J
R 917 RS1/10S103J

----- Circuit Symbol & No. Part Name -----Part No.
CAPACITORS

C 901 CCSQCH301J50
C 902 CKSQYF104Z25
C 903 CKSYF224Z25

Unit Number :
Unit Name : Control Unit

MISCELLANEOUS

IC 351 UPC1347GS
IC 601 UPD6374AGH
IC 602 XRA4558F
IC 651 PA3026
IC 653 XRA4558F

IC 701 UPD6375GC
IC 702 TC9237F-PK
IC 703 TA2009F
IC 751 PD5229A
IC 752 MB3854PF

Q 351 2SB1260
Q 601 2SB709A
Q 651 2SB1184F5
Q 652 2SB1184F5
Q 654 DTC114EK

Q 701 702 2SD1781K
Q 704 2SB709A
Q 752 DTA114EK
Q 753 DTA114EK
Q 754 DTC114EK

Q 755 2SD1760F5
Q 756 2SD1030
D 651 SC016-2
D 652 SC016-2
D 701 MA151WAMIN

D 757 HZM6R8N82
D 758 MA151A-MA
L 701 LCTBR39K2125
TH 752 CCX1015
X 701 CSS1067

X 751 CSS1084
VR 351 CCP1183
VR 352 355 356 CCP1185
VR 353 354 CCP1177
Checker Chip CKF1025

RESISTORS

R 351 RS1/8S100J
R 353 RS1/16S62J
R 354 757 779 RS1/16S47J
R 355 RS1/16S12J
R 356 RS1/16S68J

R 357 RS1/16S68J
R 358 RS1/16S32J
R 359 RS1/16S32J
R 360 RS1/16S68J
R 361 RS1/16S15J

R 362 RS1/8S120J
R 364 RS1/16S10J
R 369 RS1/16S10J
R 375 377 713 RS1/16S10J
R 379 RS1/16S53J

R 380 RS1/16S10J
R 381 RS1/16S13J
R 382 RS1/16S13J
R 601 602 603 604 605 607 610 RS1/16S10J
R 606 RS1/16S24J

==== Circuit Symbol & No. Part	Name =====Part No.
R 609	RS1/16S102J
R 611 612 665	RS1/16S102J
R 613	RS1/16S102J
R 614	RS1/16S472J
R 615	RS1/16S472J
R 616	RS1/16S102J
R 617	RS1/8S0R0J
R 618 619 620	RS1/8S102J
R 652	RS1/16S162J
R 654	RS1/16S162J
R 655	RS1/16S183J
R 656	RS1/16S362J
R 657	RS1/16S162J
R 663	RS1/10S181J
R 664 753 755	RS1/16S103J
R 669 797	RS1/16S103J
R 670	RS1/10S151J
R 676	RS1/16S683J
R 679	RS1/16S102J
R 684	RS1/16S102J
R 701 702 711 712 764	RS1/16S102J
R 704 705	RS1/16S162J
R 707 708	RS1/16S223J
R 709 710 729 731	RS1/16S0R0J
R 717	RS1/16S301J
R 721	RS1/16S472J
R 722	RS1/16S162J
R 724	RS1/10S1R0J
R 725	RS1/16S472J
R 730 733	RS1/16S0R0J
R 738 798	RS1/16S0R0J
R 751	RS1/10S1R0J
R 752	RS1/16S183J
R 754 776	RS1/16S472J
R 756 771 772 773	RS1/16S222J
R 758	RS1/16S224J
R 765 793	RS1/16S102J
R 766	RS1/16S473J
R 767 768	RS1/16S224J
R 769 770	RS1/16S104J
R 774	RS1/16S103J
R 775	RS1/16S104J
R 778	RS1/16S103J
R 780	RS1/16S104J
R 781 782	RS1/16S362J
R 783 784 785 786 787	RS1/16S681J
R 788	RS1/16S102J
R 791 792	RS1/8S391J
R 794	RS1/16S151J
R 795	RS1/16S0R0J
R 799	RS1/10S1R5J

CAPACITORS

C 351	CEV470M16
C 352	CKSQYB104K25
C 353	CEV101M6R3
C 354 355	CSZSR4R7M10
C 357 359 366	CKSRYB102K50
C 358	CKSRYB331K50
C 360	CKSRYB271K50
C 361	CCSRCH220J50
C 601	CKSRYB222K50
C 603	CKSRYB331K50
C 604 606 703 704	CKSYB224K25
C 605	CKSYB103K25
C 607 654 759	CKSYB224K25
C 608	CSZS010M16
C 609 610 761	CEV100M16

==== Circuit Symbol & No. Part	Name =====Part No.
C 611 701 707 710	CKSRYB103K25
C 652	CKSYB224K25
C 653	CCH1148
C 655	CKSRYB391K50
C 658	CCH1148
C 662	CEV101M10
C 666	CKSQYB102K50
C 670	CKSQYB273K50
C 671	CKSRYB103K25
C 672	CKSQYB333K25
C 702	CEV101M6R3
C 705 706	CCSRCH090D50
C 712	CEV220M6R3
C 716	CEV100M16
C 722 723	CEV4R7M35
C 724	CCSRCH151J50
C 726	CCSRCH100D50
C 727 728	CKSRYB103K25
C 751 752	CCSRCH221J50
C 753 754 755	CCSRCH221J50
C 756	CKSRYB472K50
Unit Number :	
Unit Name : Switch P.C.Board	
D 1 2 3 4	BR4361F
M 1	CXM1058
M 2	CXA4649
M 3	CXA4267
S 1 2	CSN1012
Unit Number :	
Unit Name : Detector P.C.Board	
P 1 2 3 4	Photo Transistor
P 1 2 3 4	PT4800
Miscellaneous Parts List	
PU Unit	CGY1020

- The DEH-730/UC, DEH-720/US, DEH-640/ES, DEH-520/UC and DEH-440/ES Parts Lists enumerate the parts which differ from those enumerated in the DEH-44/US Parts List only.

The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.

The DEH-44/US Parts List is given on page 85.

● Tuner Amp Unit

	DEH-44/US	DEH-730/UC	DEH-720/US	DEH-640/ES	DEH-520/UC	DEH-440/ES
Circuit Symbol & No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
IC751	PD4473A	PD4473A	PD4473A	PD4473A	PD4425A	PD4425A
Q751	2SB1238	2SB1238	*****	2SB1238	*****	*****
Q752	UN2211	UN2211	*****	UN2211	*****	*****
Q755	2SB1238	2SB1238	2SB1238	2SB1238	*****	*****
IB752	CWW1336	CWW1336	CWW1336	CWW1336	*****	*****
IB753	CWW1337	CWW1337	CWW1337	CWW1337	*****	*****
R651	*****	*****	*****	RS1/10S103J	*****	RS1/10S103J
R653	*****	*****	*****	RS1/10S103J	*****	RS1/10S103J
R654	RS1/10S103J	RS1/10S103J	*****	RS1/10S103J	*****	*****
R655	RS1/10S103J	RS1/10S103J	RS1/10S103J	RS1/10S103J	*****	*****
R656	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	*****	RS1/10S0R0J	*****
R658	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	*****	RS1/10S0R0J	RS1/10S0R0J
R659	*****	*****	RS1/10S0R0J	*****	RS1/10S0R0J	RS1/10S0R0J
R660	*****	*****	*****	*****	RS1/10S0R0J	RS1/10S0R0J
R764	RS1/10S472J	RS1/10S472J	*****	RS1/10S472J	*****	*****
R765	RD1/4PM272J	RD1/4PM272J	*****	RD1/4PM272J	*****	*****
R768,769	RS1/10S103J	RS1/10S103J	RS1/10S103J	RS1/10S103J	*****	*****
R776	*****	*****	*****	*****	RS1/10S0R0J	RS1/10S0R0J

● FM/AM Tuner Unit

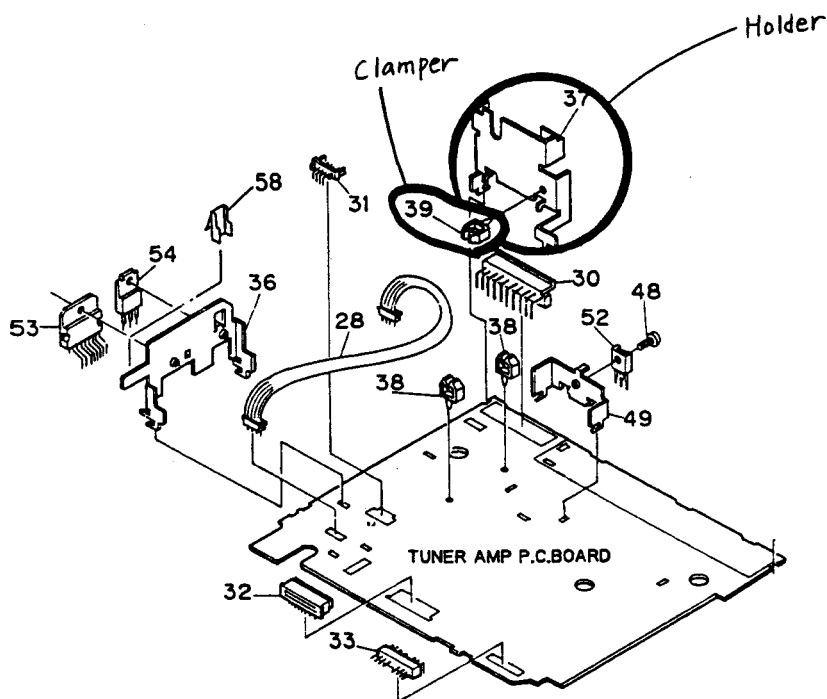
	DEH-44/US	DEH-520/UC DEH-720/US DEH-730/UC	DEH-640/ES DEH-440/ES
Circuit Symbol & No.	Part No.	Part No.	Part No.
Q3	2SA1162	*****	*****
D11	1SV128A-BB	*****	*****
VR1	CCP1025	CCP1025	CCP1019
L11,12	CTF1065	*****	*****
R3	RS1/10S683J	RS1/10S683J	RS1/10S124J
R8	RS1/10S331J	*****	*****
R9	RS1/10S223J	*****	*****
R11	RS1/10S104J	*****	*****
R12	RS1/10S470J	*****	*****
R13	*****	RS1/10S0R0J	RS1/10S0R0J
C11,12,13,14	CCSQCH220J50	*****	*****
C15	CKSQYB223K25	*****	*****

● Key Board Unit

	DEH-640/ES DEH-730/UC DEH-44/US	DEH-720/US	DEH-520/UC DEH-440/ES
Circuit Symbol & No.	Part No.	Part No.	Part No.
D901,902,903	MA153-MC	MA153-MC	*****
IL905	CEL-147	*****	*****
IL906,907,908	CEL1297	*****	*****

MODEL NO.	*	SER. NO.	MODEL NO.	*	SER. NO.	MODEL NO.	*	SER. NO.
DEH-44/US	A	07001-	DEH-670/X1B	A	02601-			
DEH-730/UC		13401-						
DEH-640/ES		03001-						
DEH-670SDK/GR		09401-						
DEH-670/EW		20721-						
DEH-720/US		22501-						
DEH-520/UC		15001-						
DEH-440/ES	▼	03001-						

#	DETAIL OF CHANGE(S)	REASON FOR CHANGES
1	Change of Holder and Clamper in Tuner Amp unit	1 To improve the binding method of the RCA cord




SERVICE MANUAL	
MODEL :	DEH-44 DEH-730 DEH-640 DEH-720 DEH-520 DEH-440
S/M NO.:	CRT1512
PAGE :	71
MODEL :	DEH-670SDK DEH-670
S/M NO.:	CRT1511
PAGE :	60

* Only the new parts are available. When the new parts are used in place of the old ones, Holder and Clamper should be changed.

Ref.	CURRENT PARTS		CODE	NEW PARTS	
#	#	SYMBOL/DESCRIPTION	PART NUMBER	PART NUMBER	SYMBOL/DESCRIPTION
A	1	Holder	NSP	CNC4968	Holder
A	1	Clamper	CNV3409	2 CNC3600	Clamper

PIONEER ELECTRONIC CORPORATION

(SPC47-489,C-29041,SPC-HN,111)


 H. ABE, MANAGER

 Technical Service Information & Coordination
 Service Administration & Technical Information Dep.